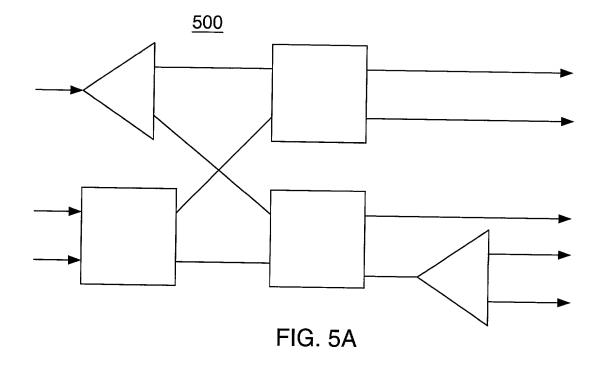
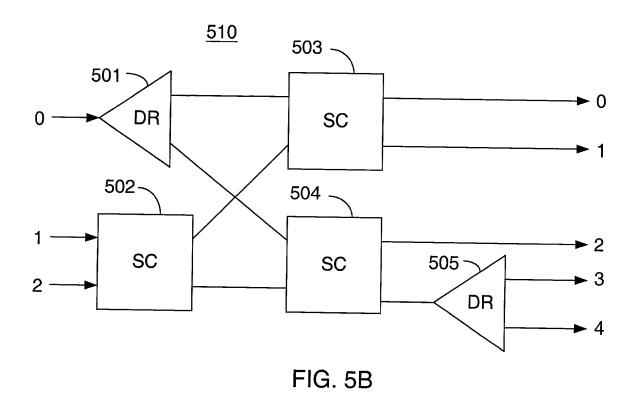


FIG. 4





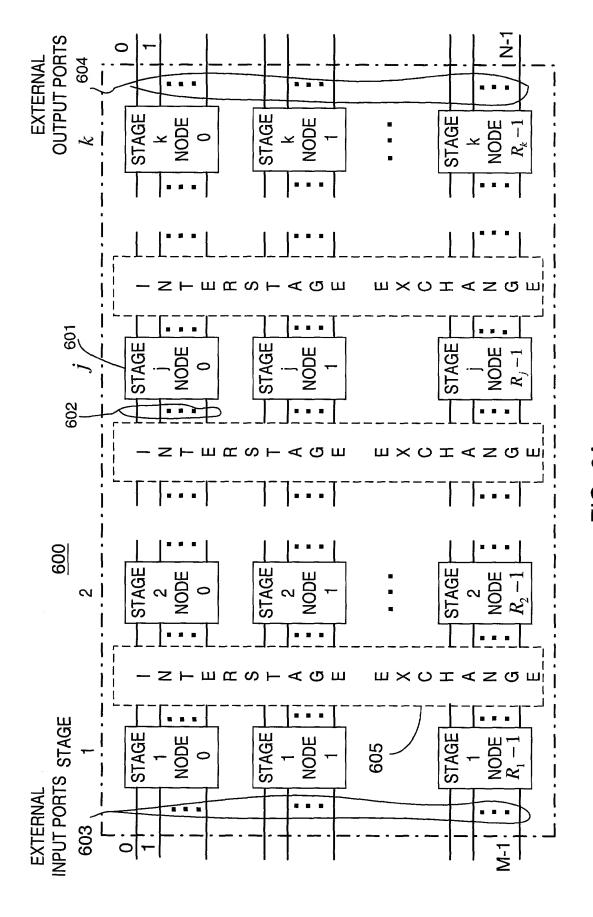
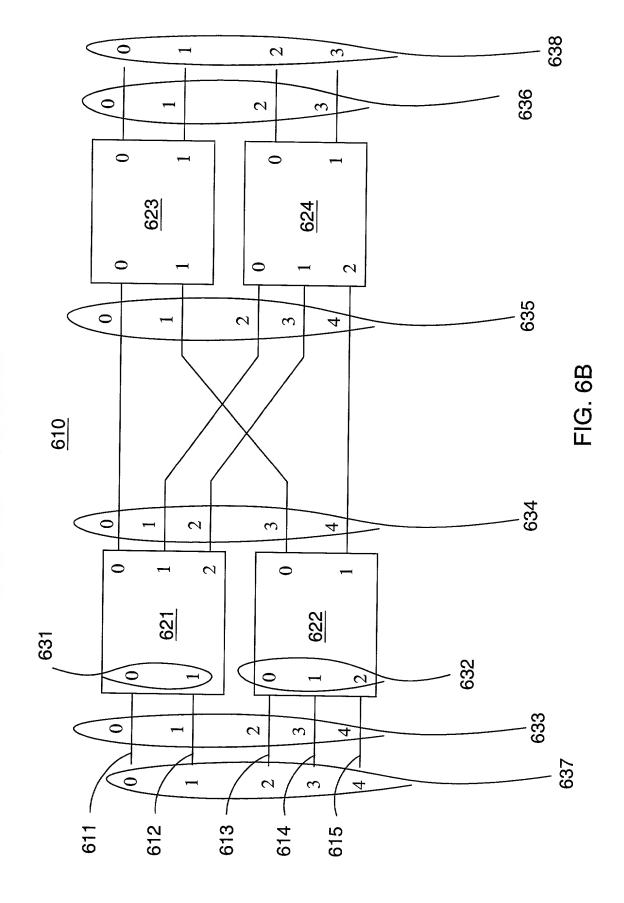
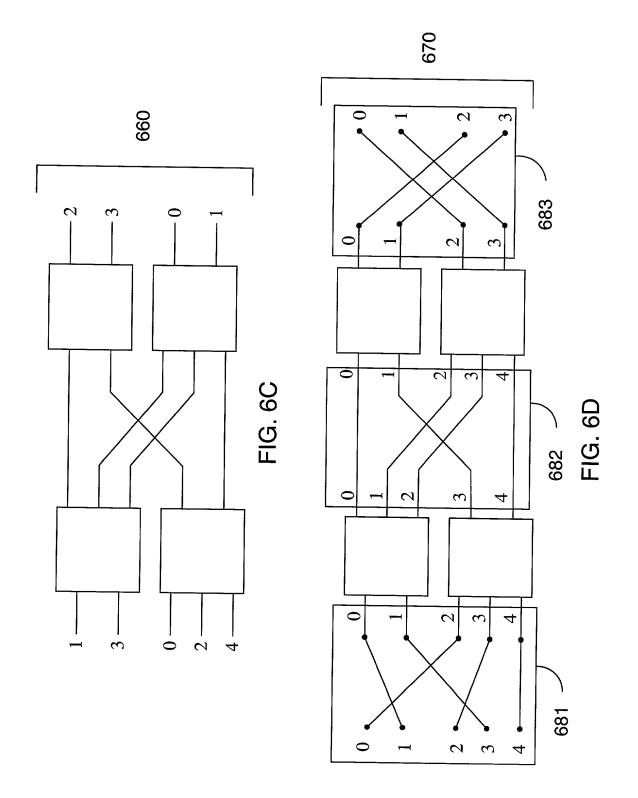
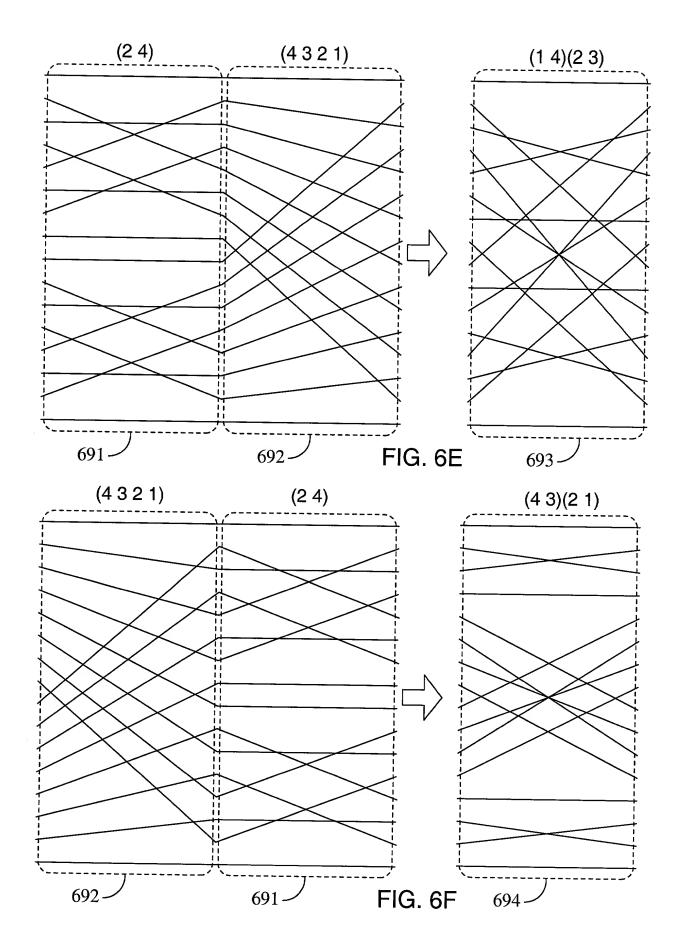
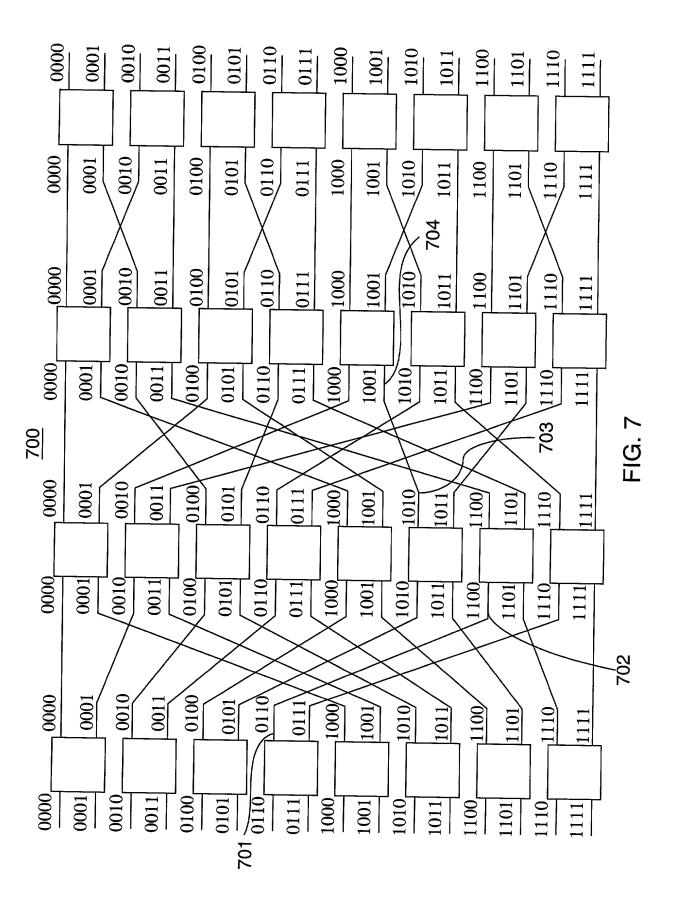


FIG. 6A

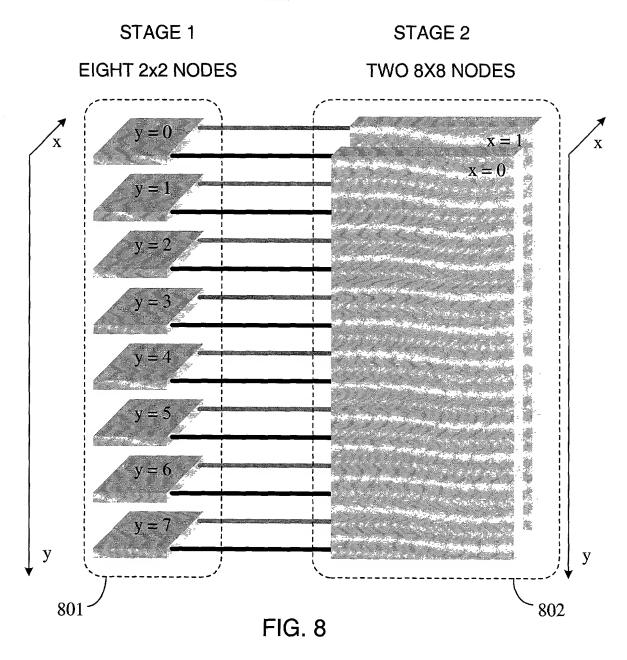


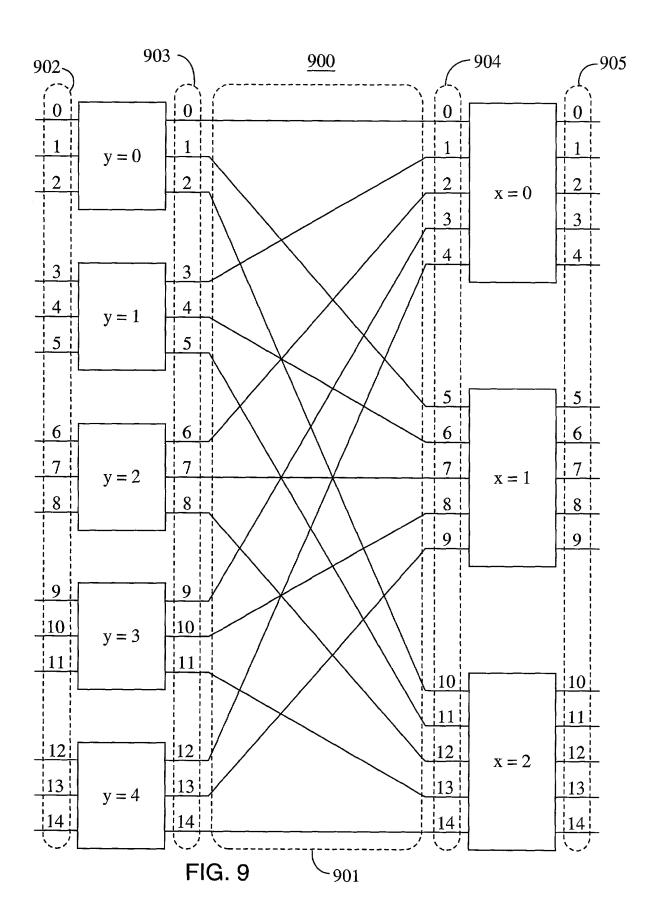


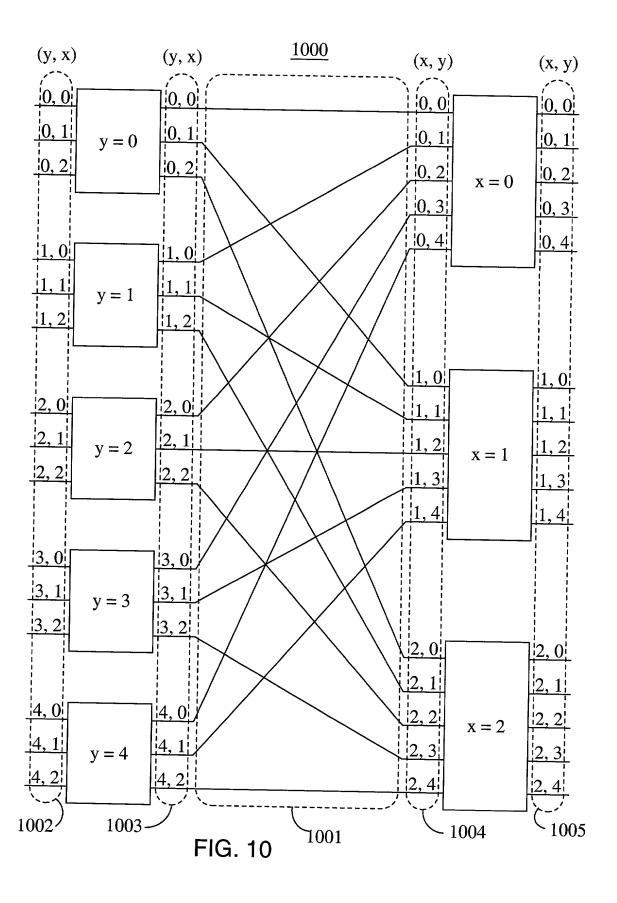


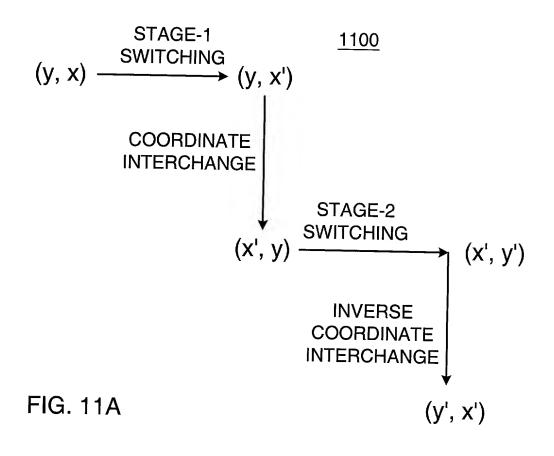


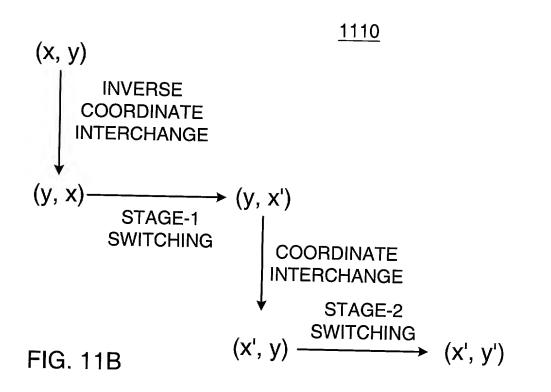


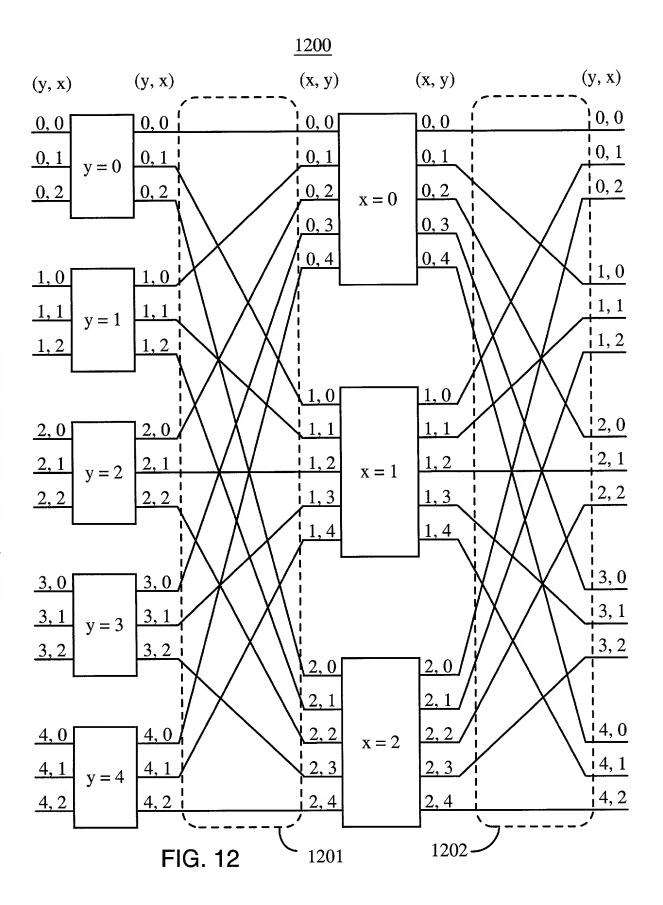


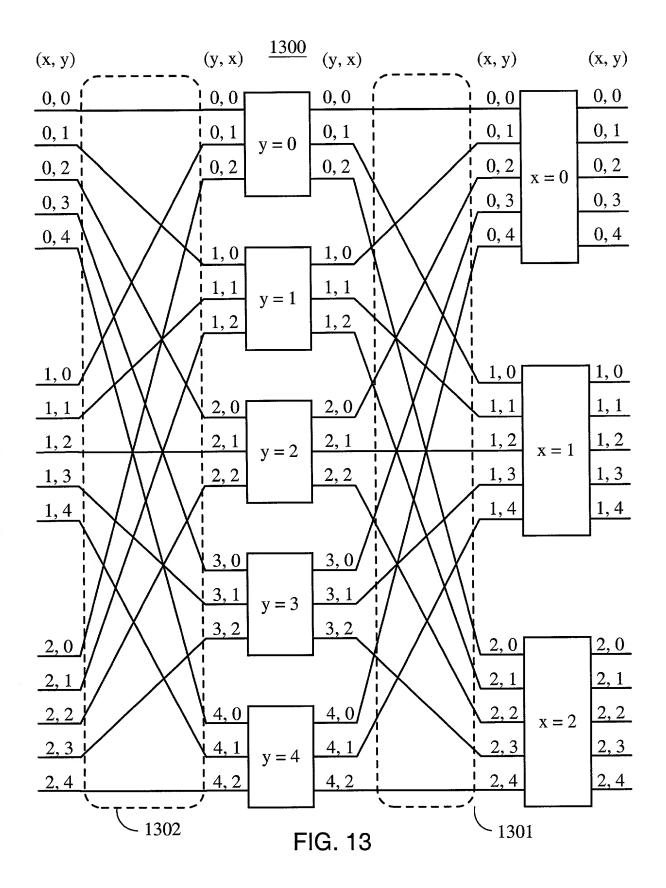


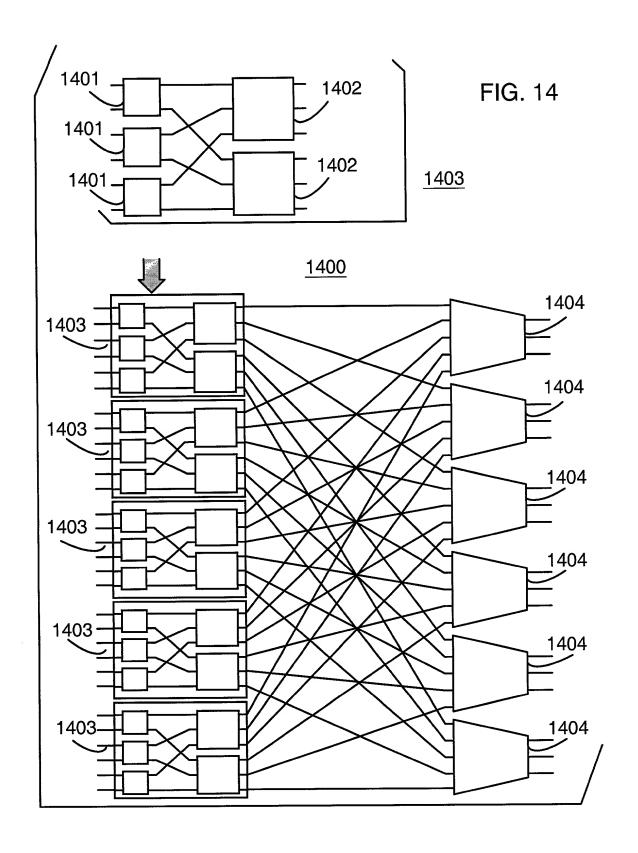












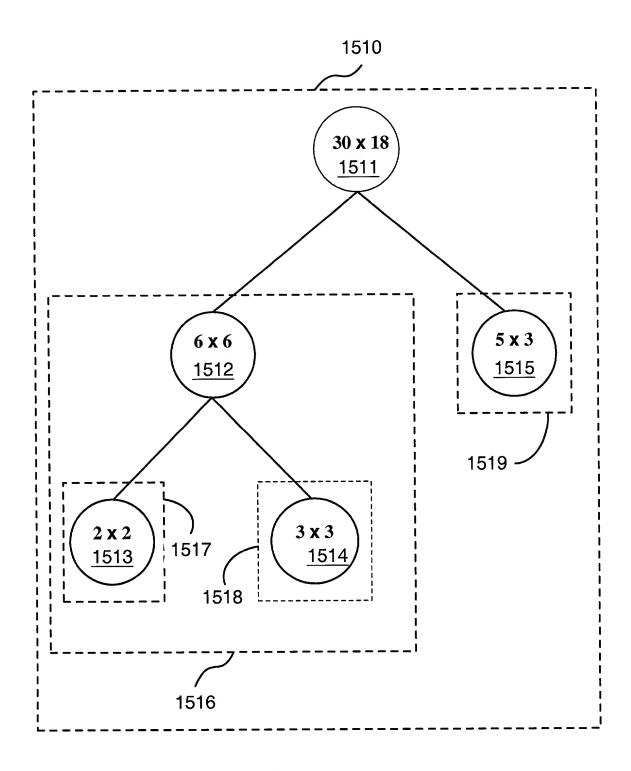
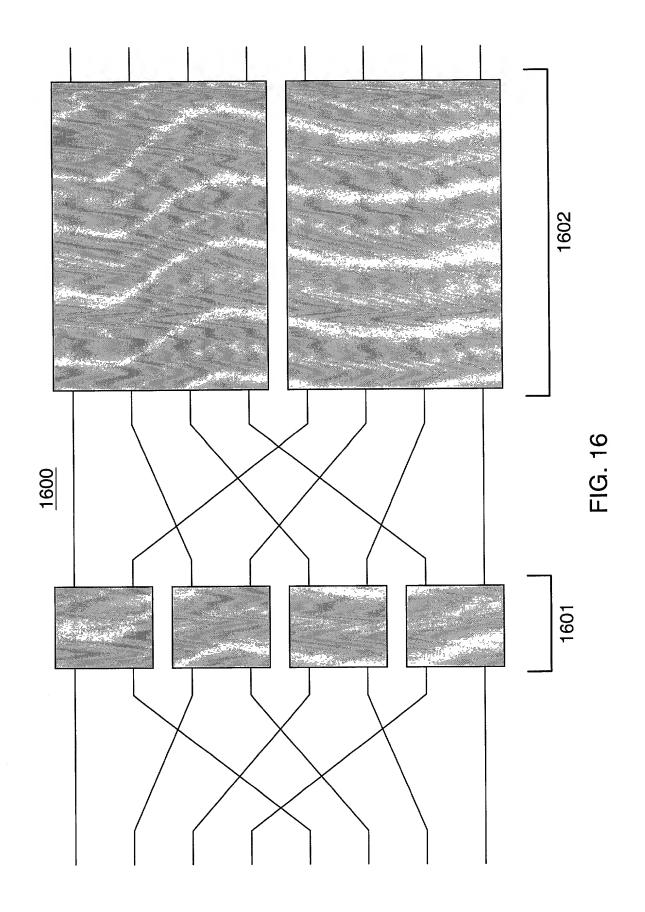
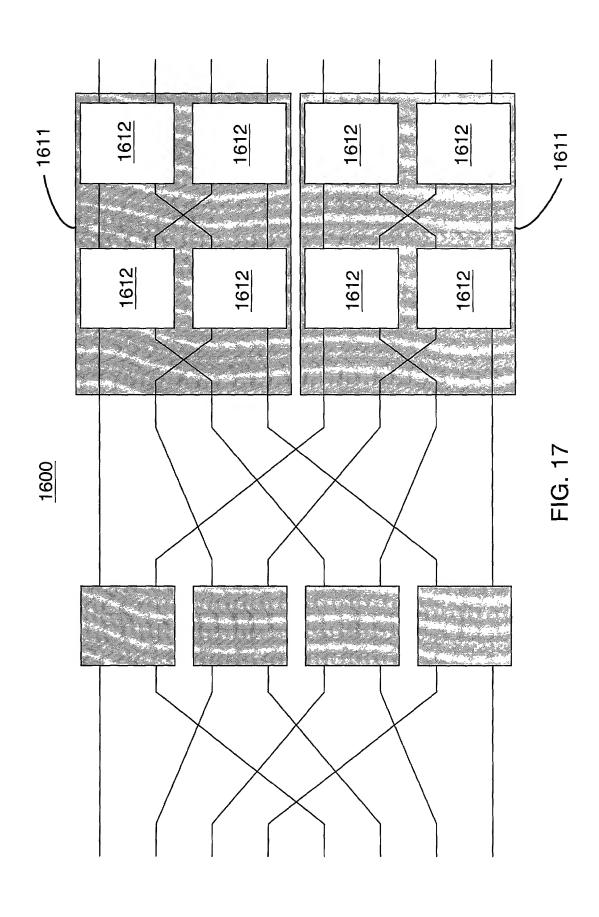
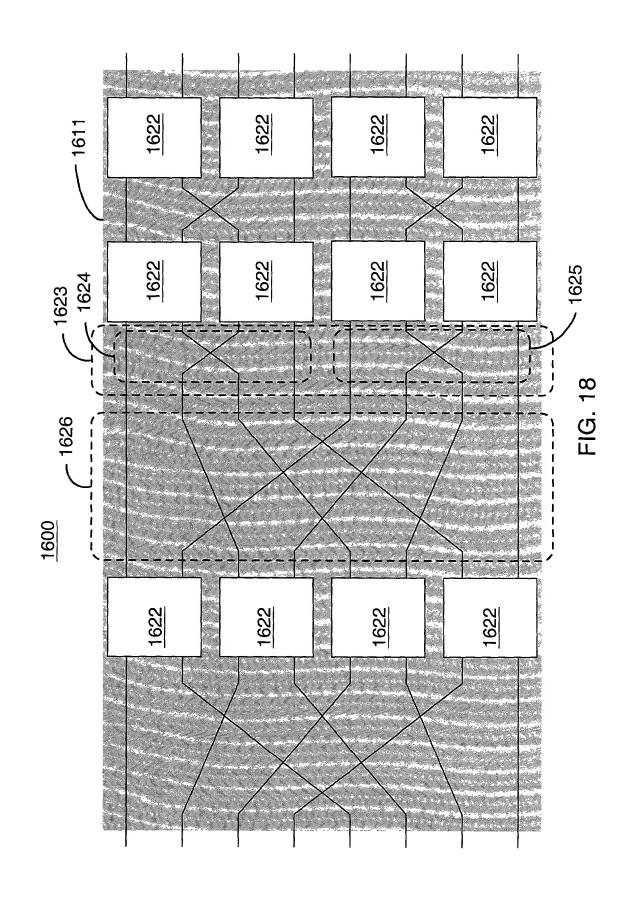


FIG. 15







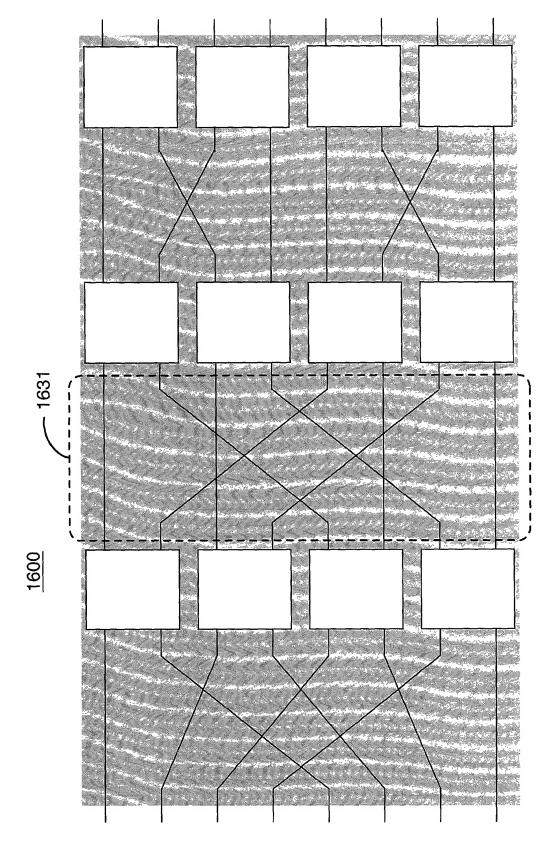


FIG. 19

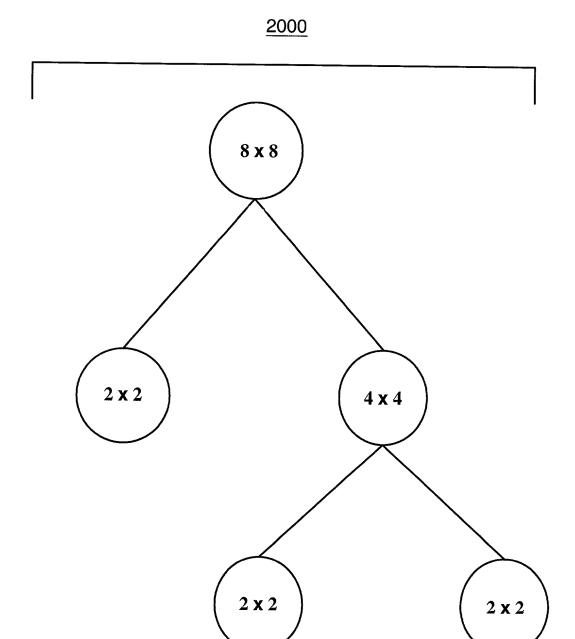
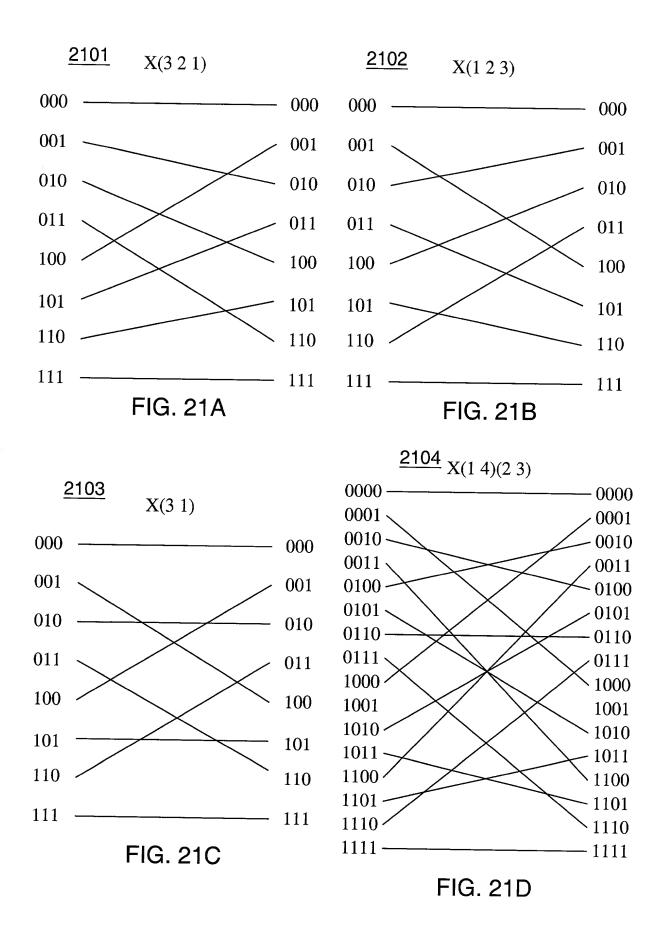
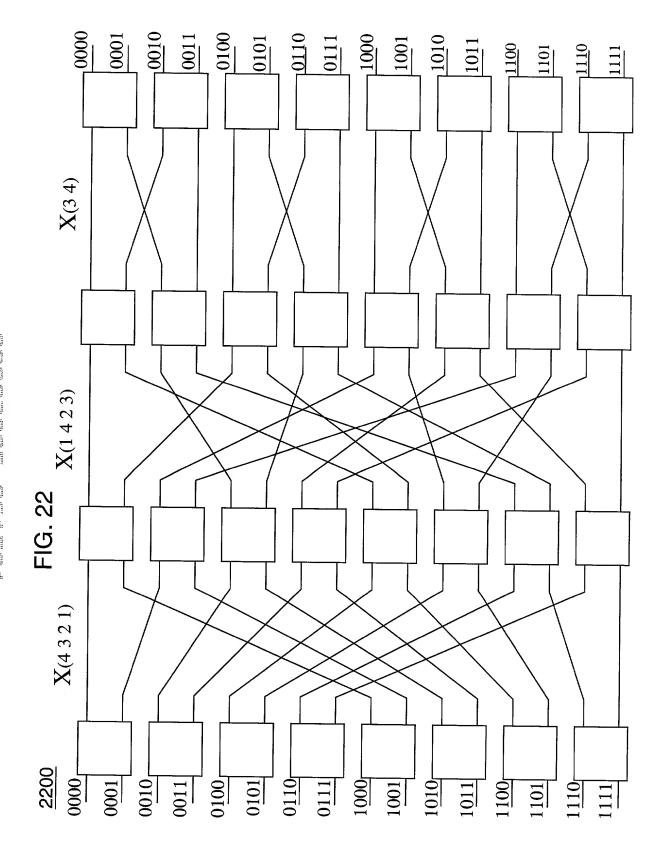
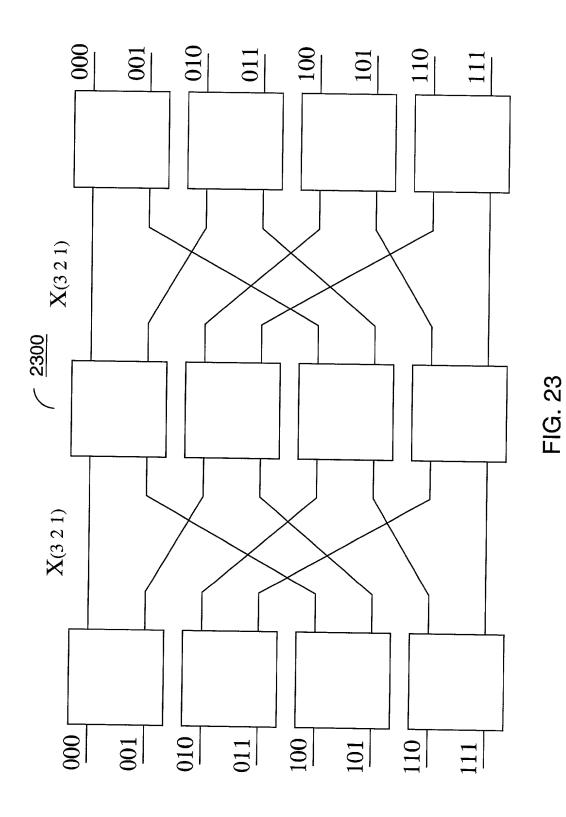


FIG. 20



i





<u>2400</u>

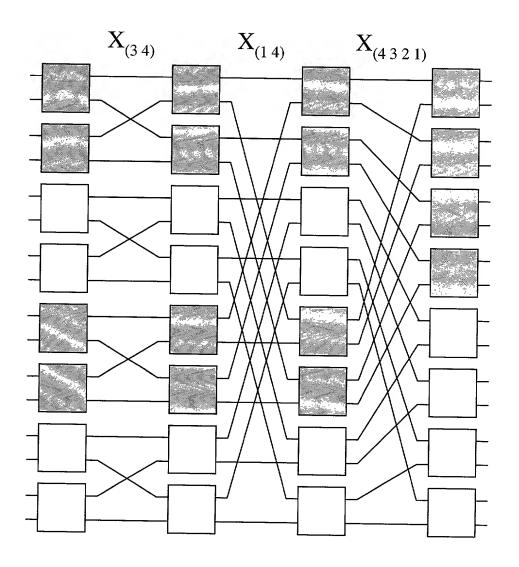
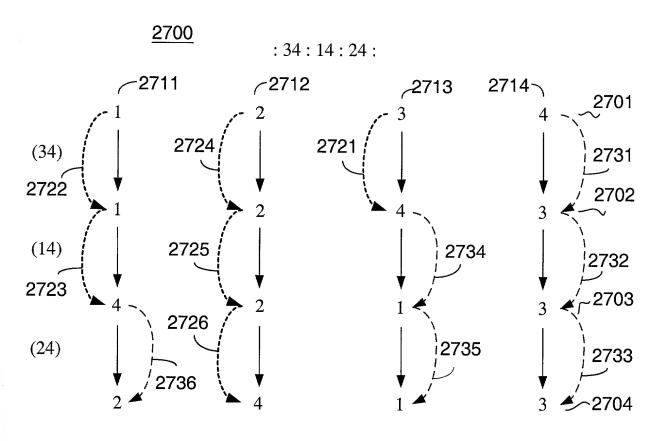


FIG. 24



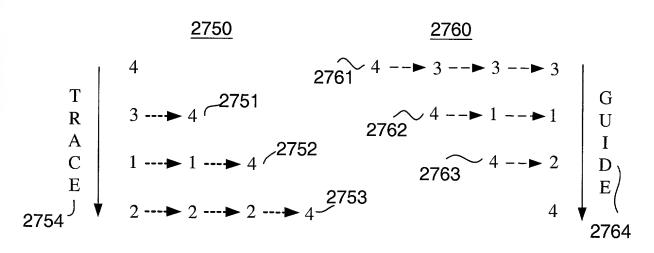


FIG. 27

FIG. 28A

FIG. 28B

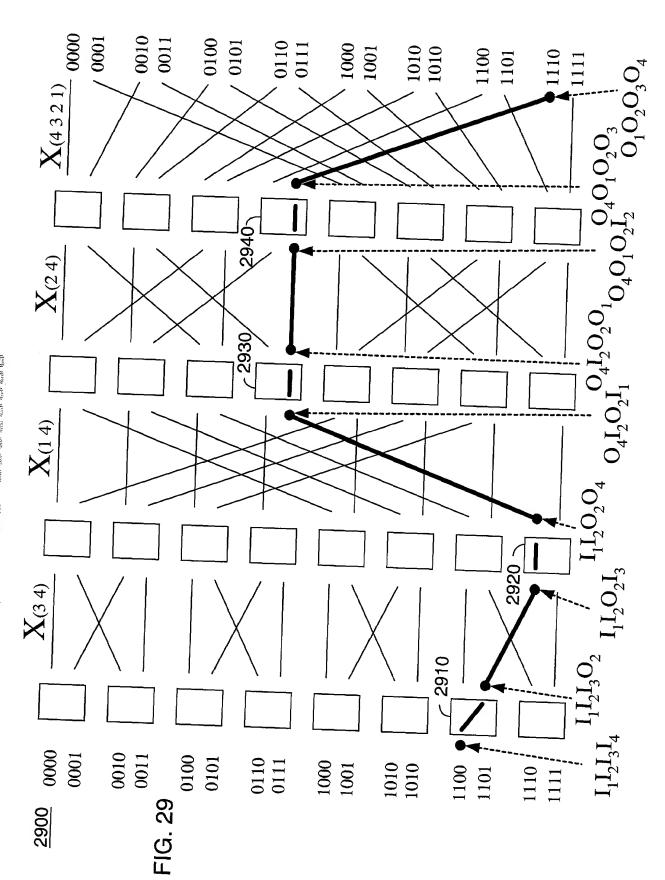
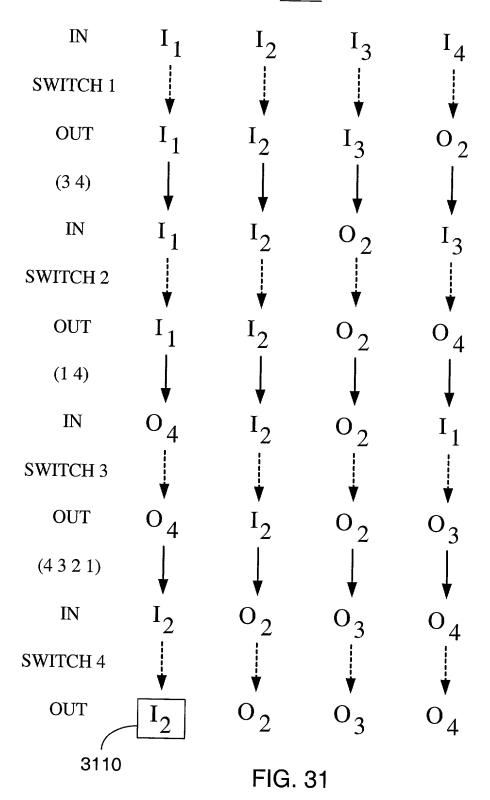
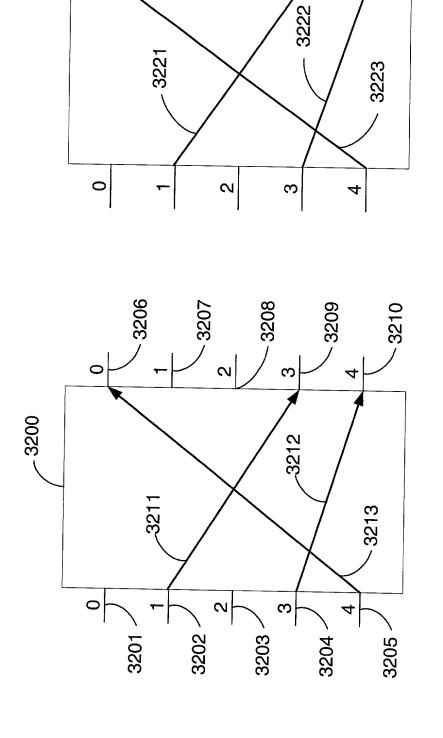


FIG. 30A

FIG. 30B

<u>3100</u>





0

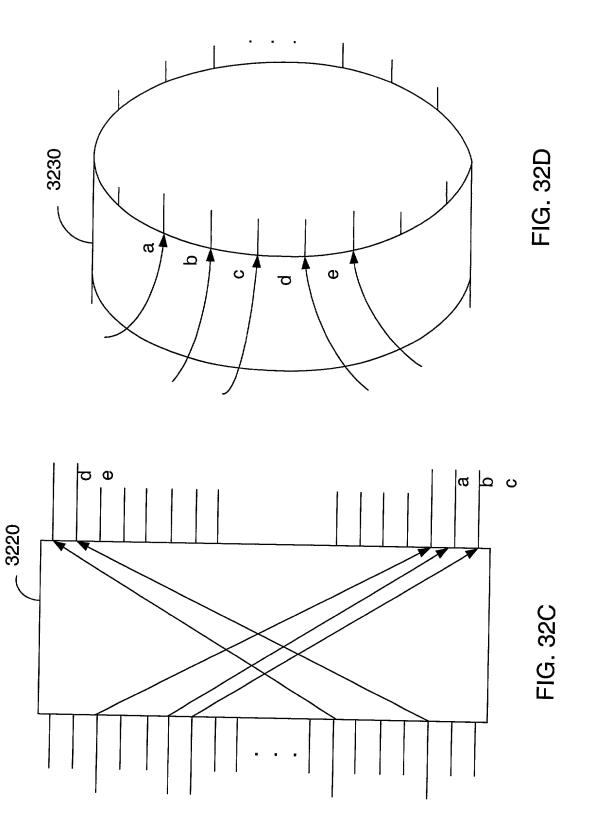
က

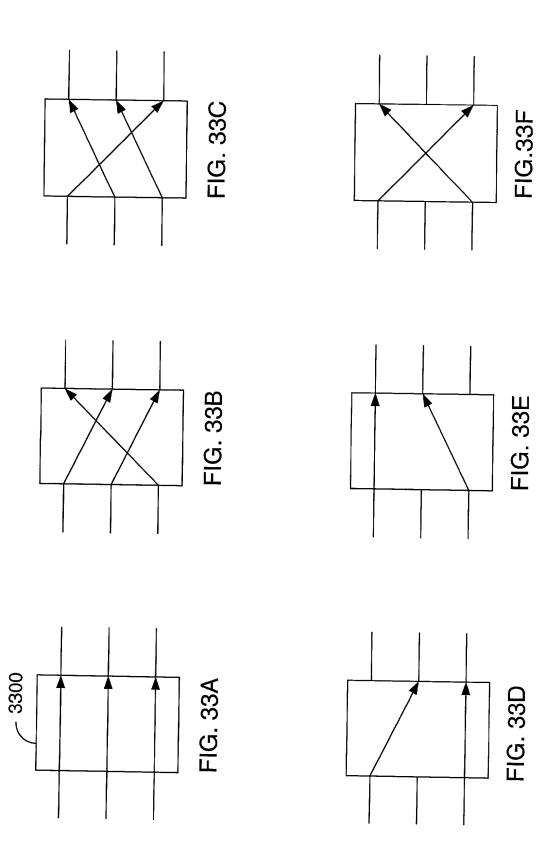
0

4

FIG. 32B

FIG. 32A





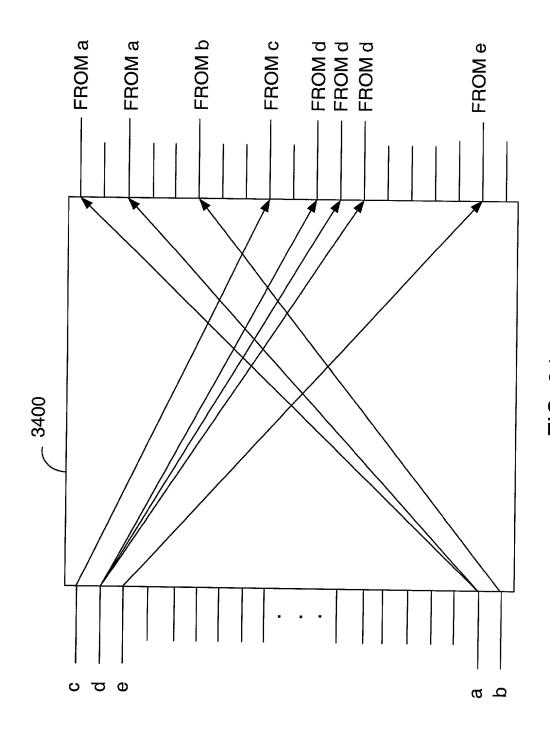
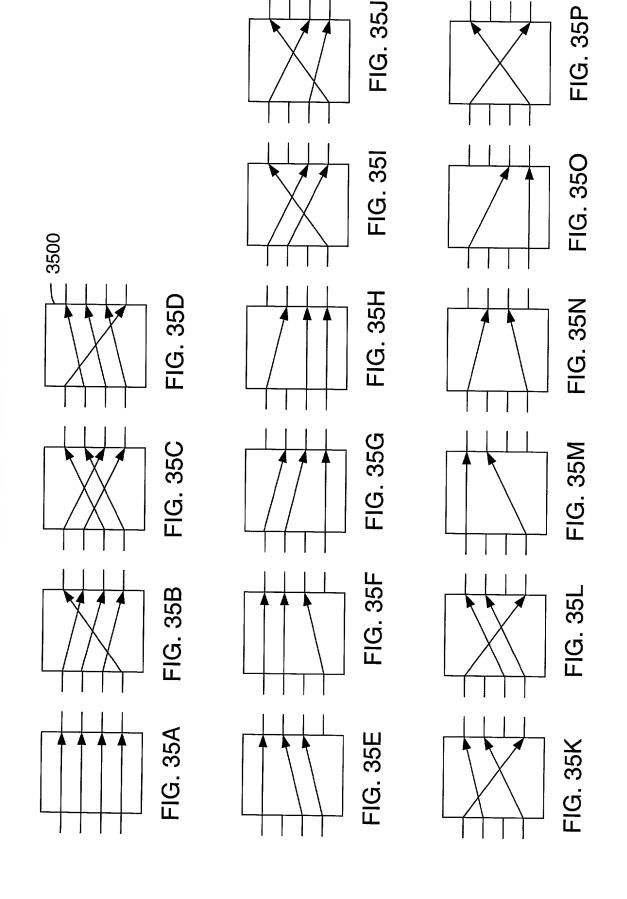
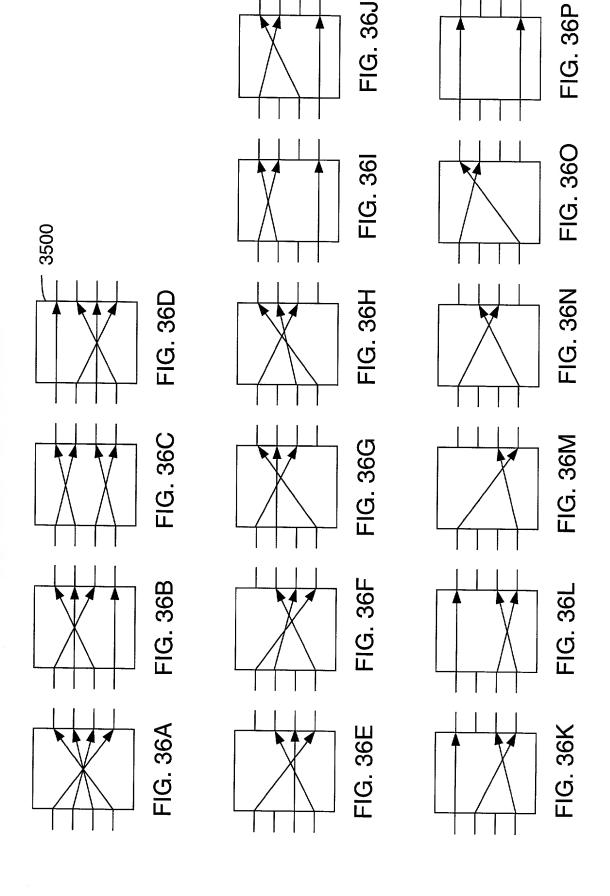
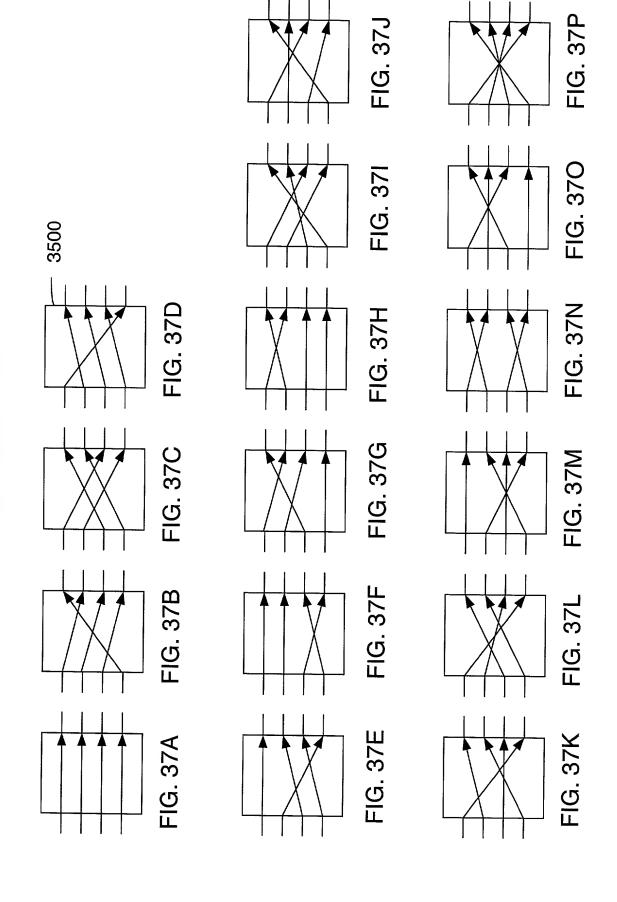
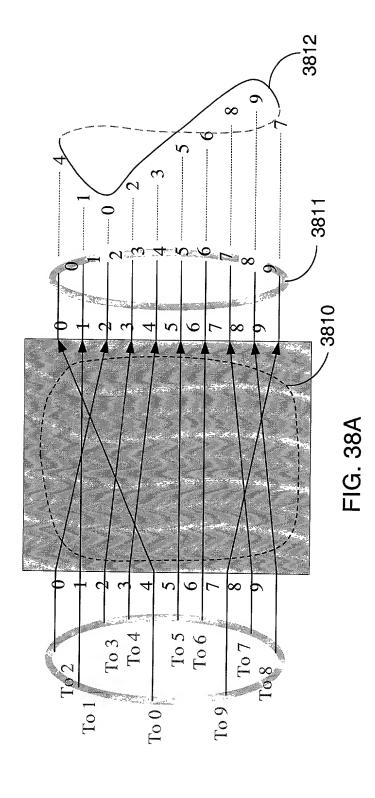


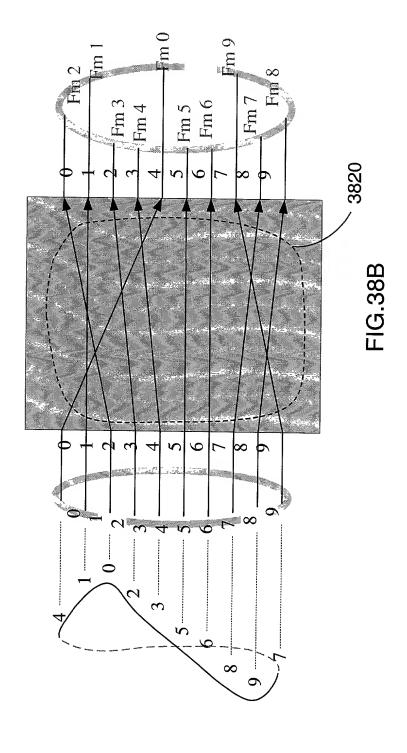
FIG. 34











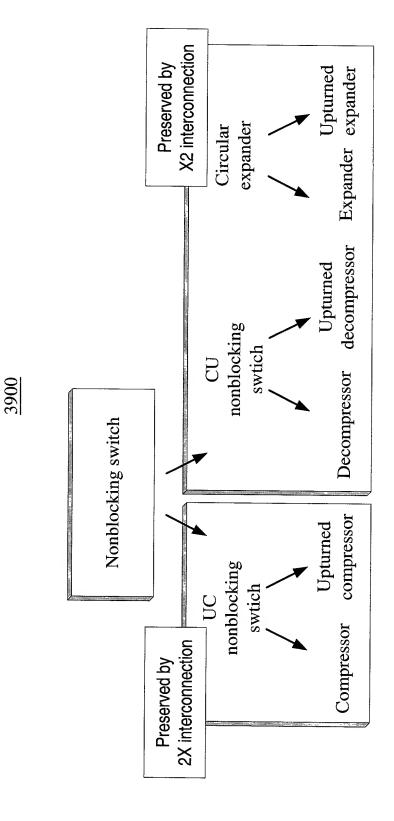
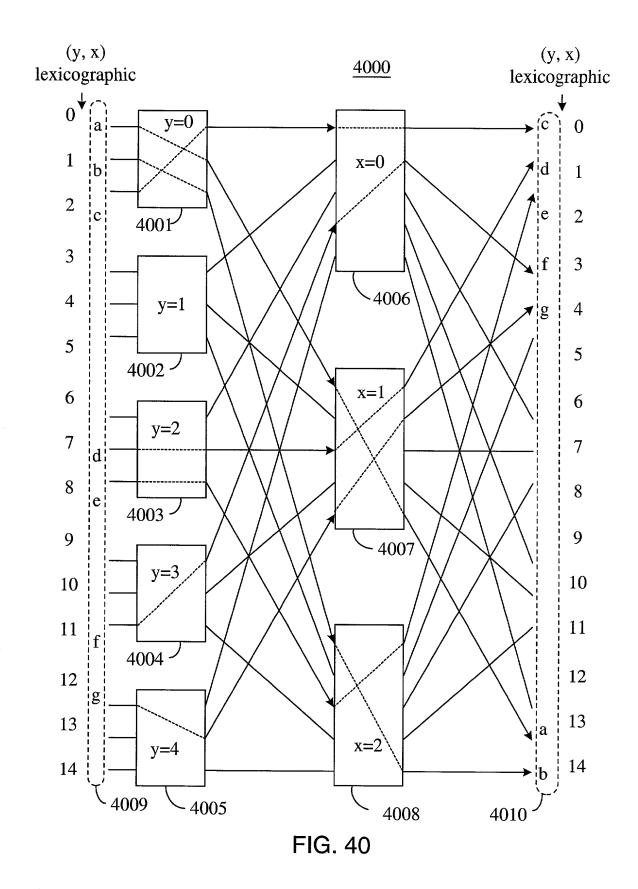


FIG. 39



4100

Preservation of the (1) compressor, (2) upturned compressor and (3) UC nonblocking properties of a switch

Recursive 2X constructions from arbitrary building blocks

Recursive 2X constructions from cells

Banyan-type networks with monotonically decreasing trace and guide

4110

Preservation of the (4) decompressor,

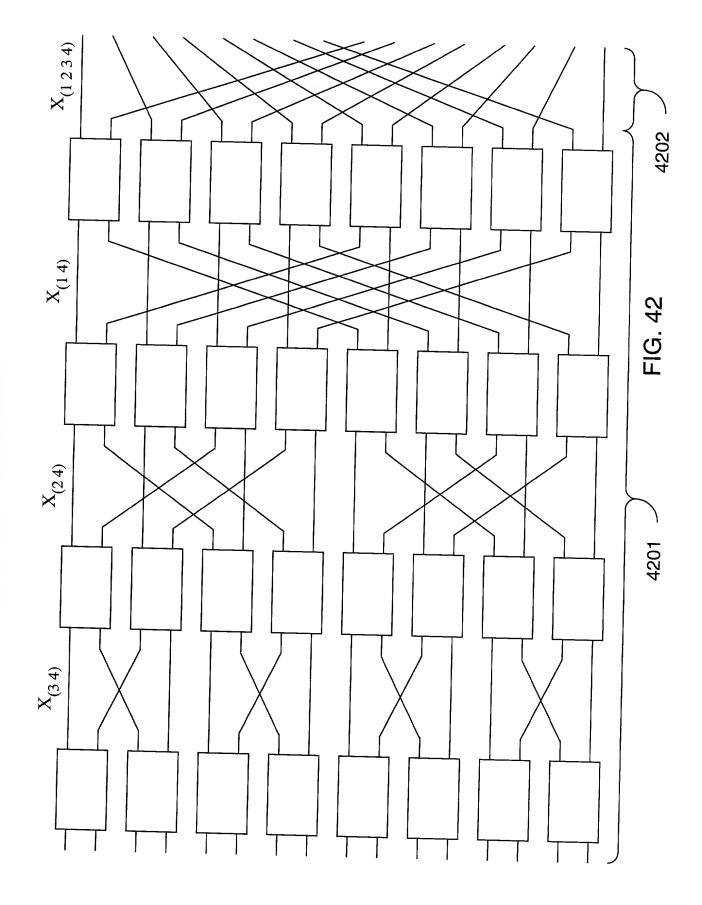
- (5) upturned decompressor,
 - (6) CU nonblocking, (7) expander,
- (8) upturned expander and
 - (9) circular expander properties of a switch

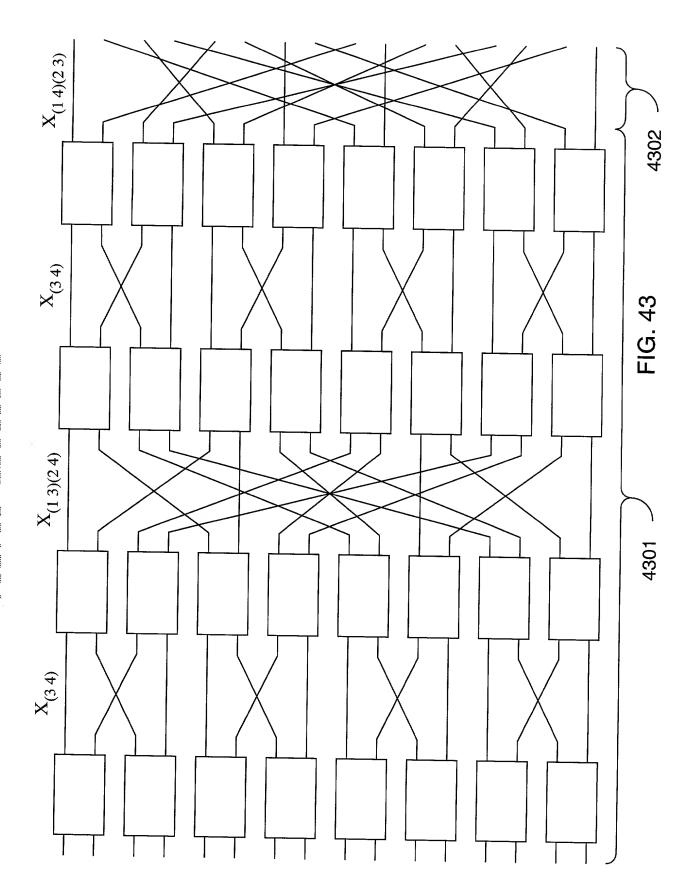
Recursive X2 constructions from arbitrary building blocks

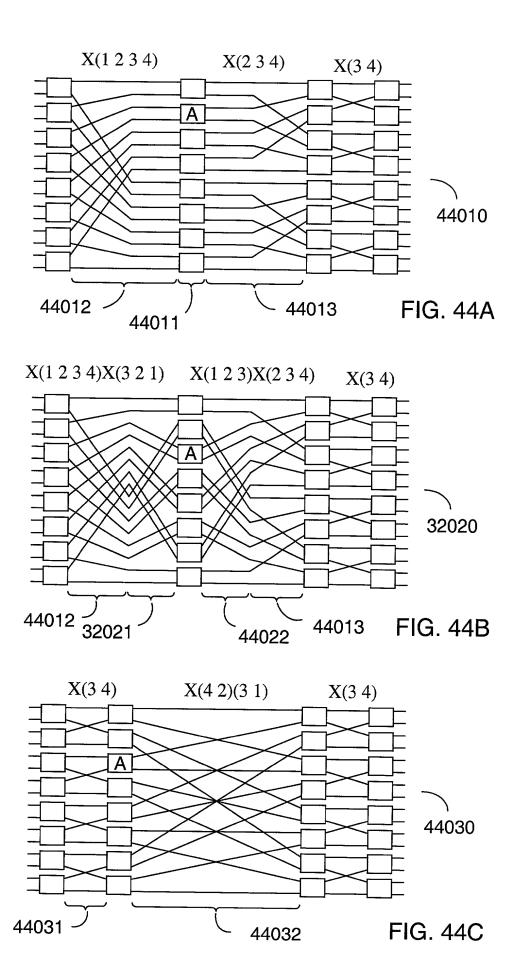
Recursive X2 constructions from cells

Banyan-type networks with monotonically increasing trace and guide

FIG. 41







Equivalence banyan-type in stronger networks among sense match of output exchange only (<==> common guide among Equivalence requiring the the networks) (<==> common trace and guide Equivalence without requiring the match of I/O exchanges Equivalence requiring the match of I/O exchanges among the networks) (unconditional) match of input exchange only (<==> common trace among Equivalence requiring the the networks) 4500

FIG. 45

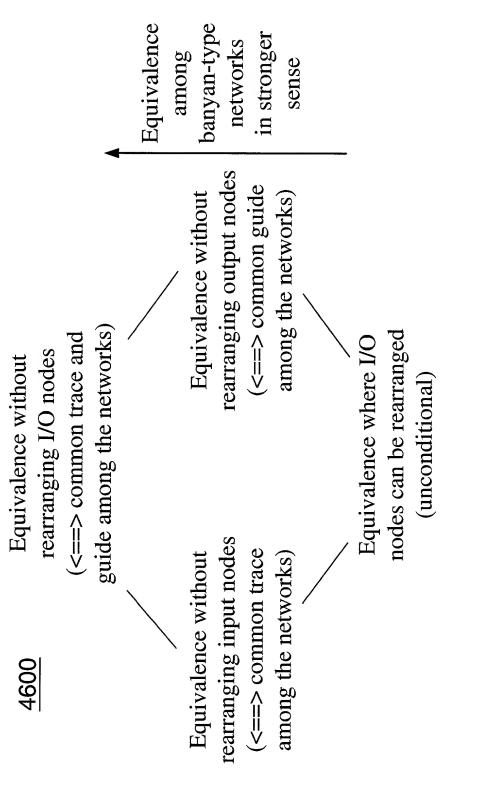


FIG. 46

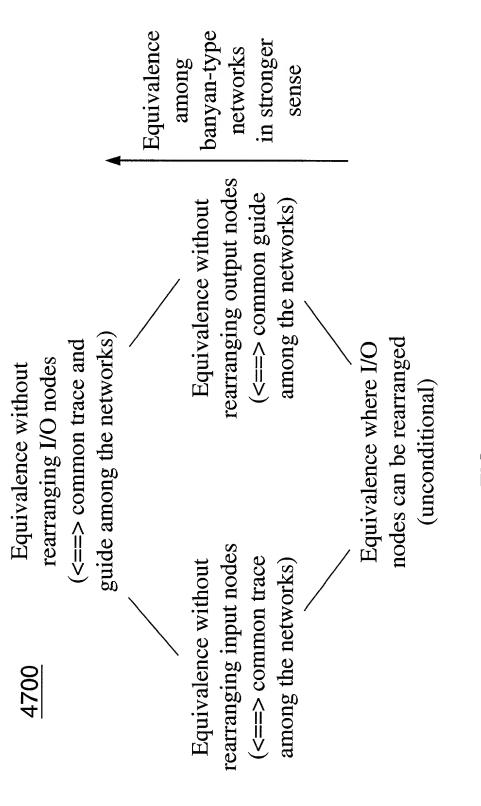


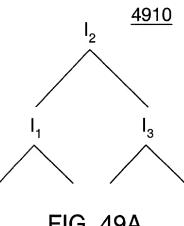
FIG. 47

Equivalence among bitpermuting in stronger networks sense rearranging output nodes (<==> common guide Equivalence without among the networks) guide among the networks) (<==> common trace and rearranging I/O nodes Equivalence without rearranging input nodes (<==> common trace among the networks) Equivalence without 4800

rearranged
(<==> trace and guide of one network can be repsectively changed to that of the other network by a permutation)

Equivalence where I/O nodes can be

FIG. 48





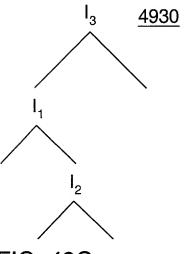
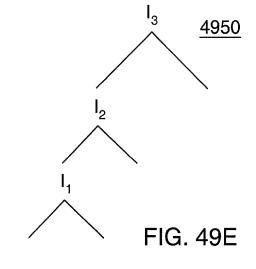
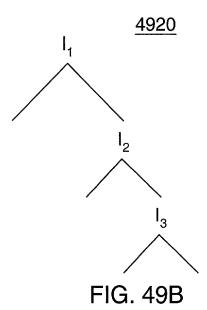


FIG. 49C





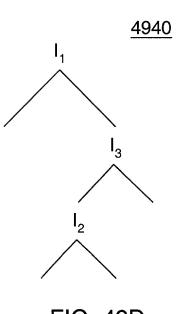
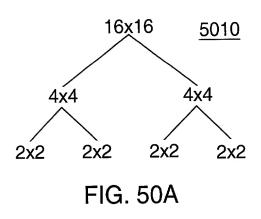


FIG. 49D



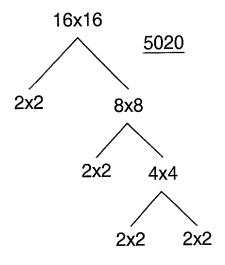
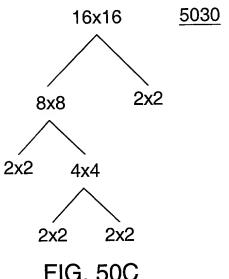
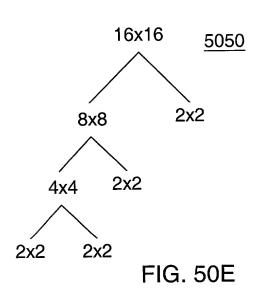


FIG. 50B







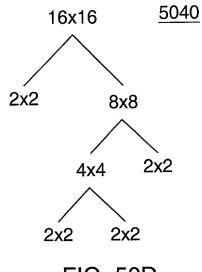


FIG. 50D

<u>5100</u>

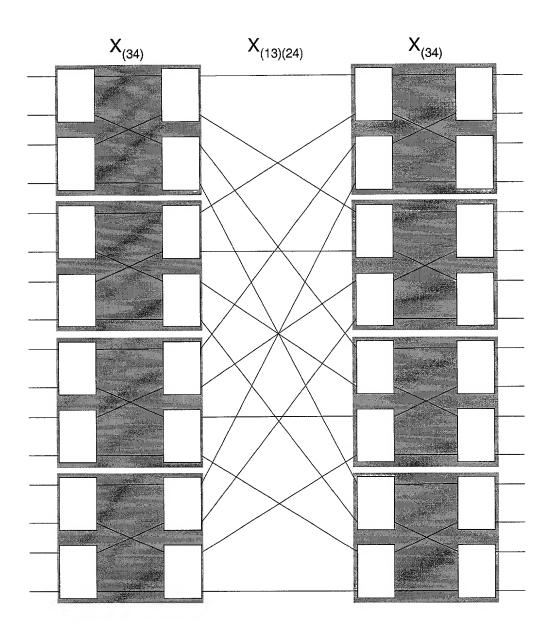


FIG. 51

<u>5200</u>

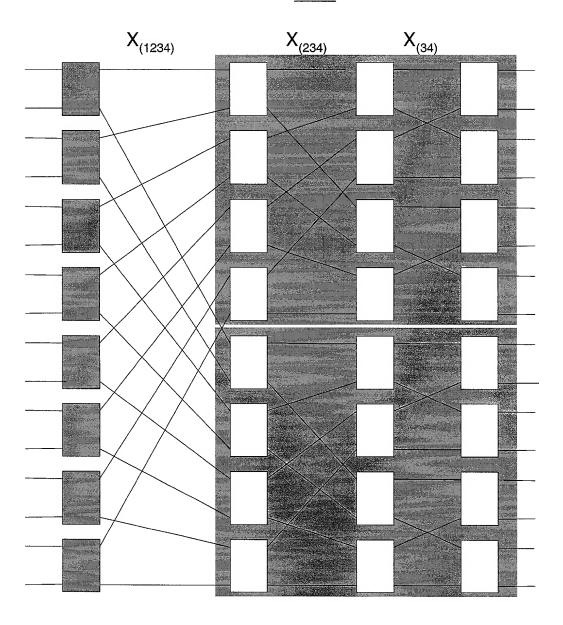
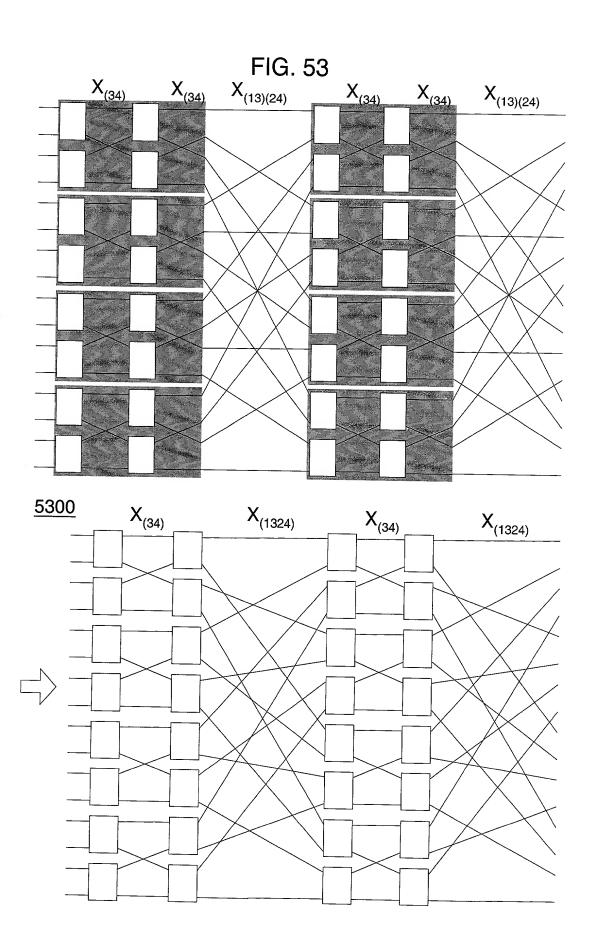


FIG. 52



<u>5400</u>

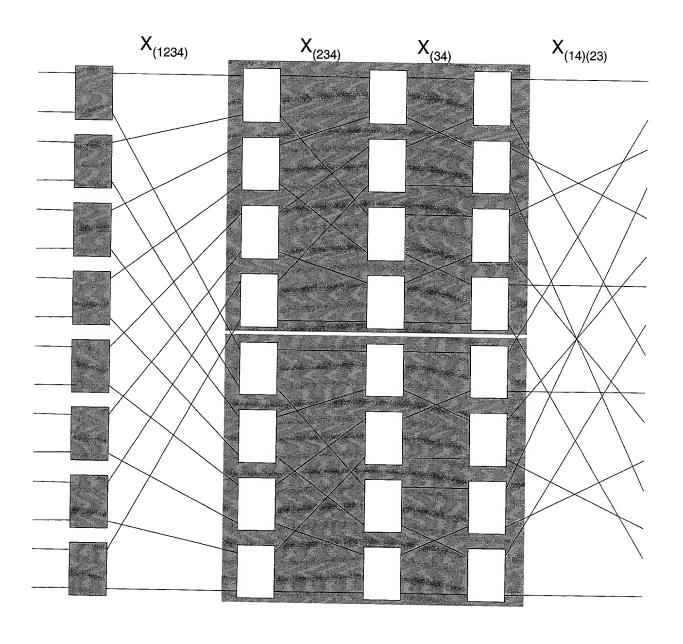


FIG. 54

<u>5500</u>

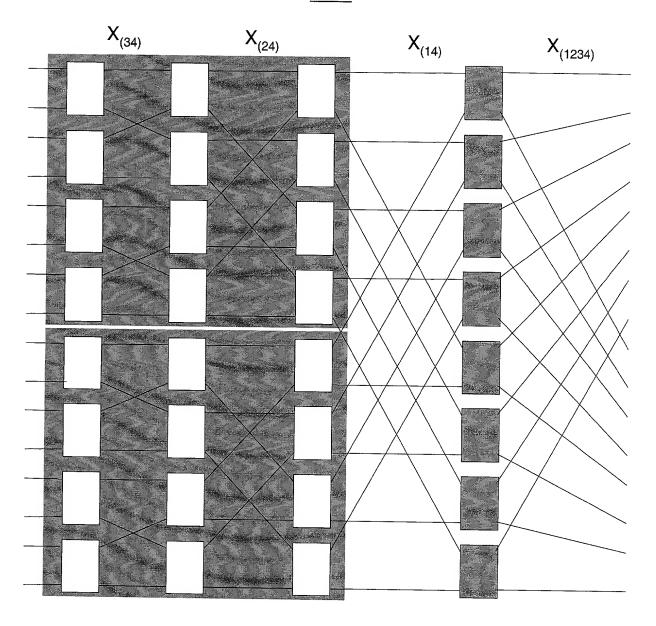
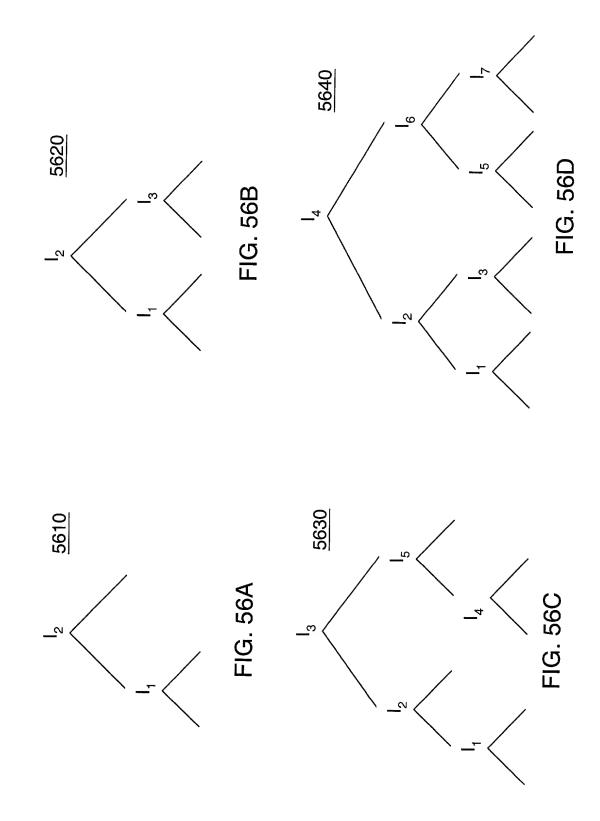
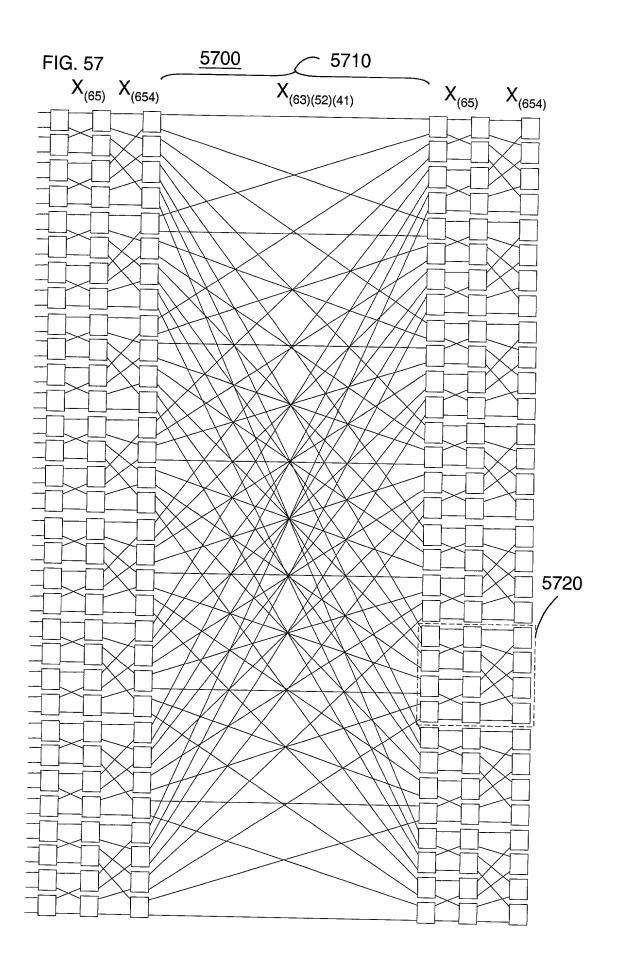
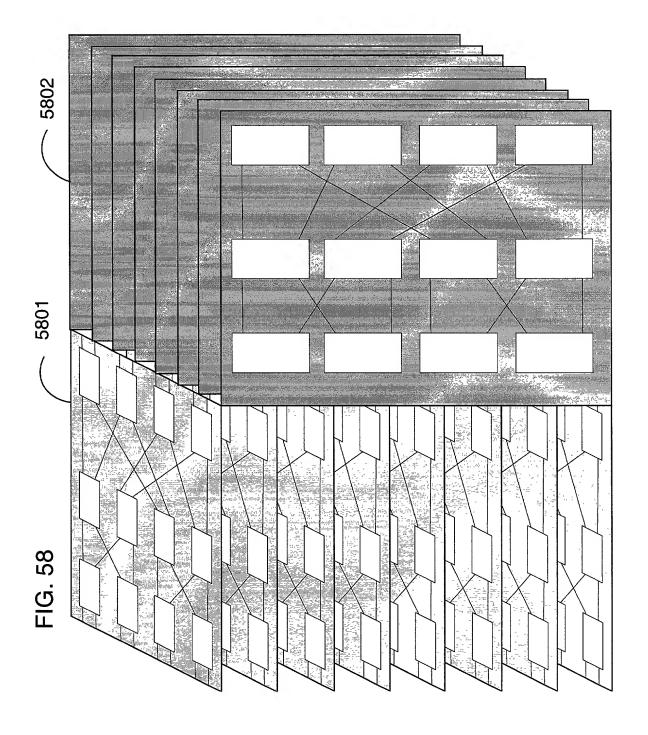
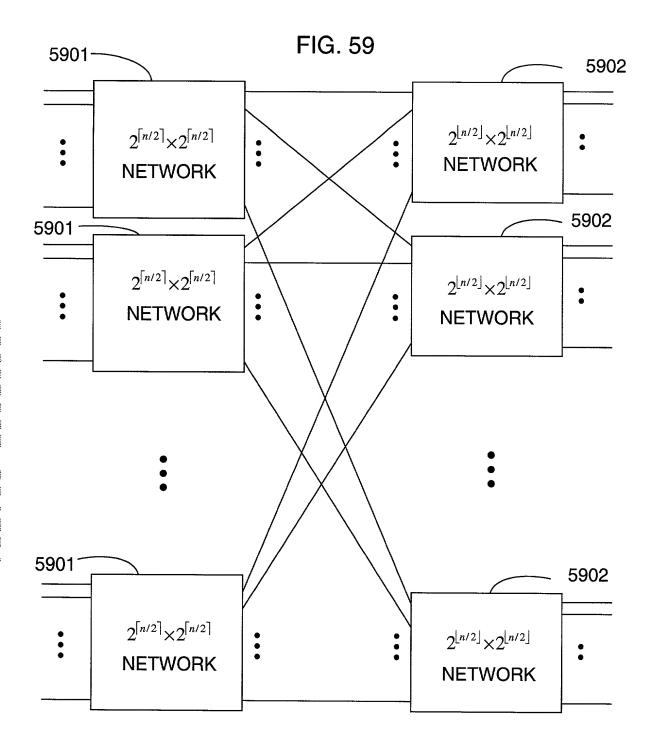


FIG. 55









<u>6000</u>

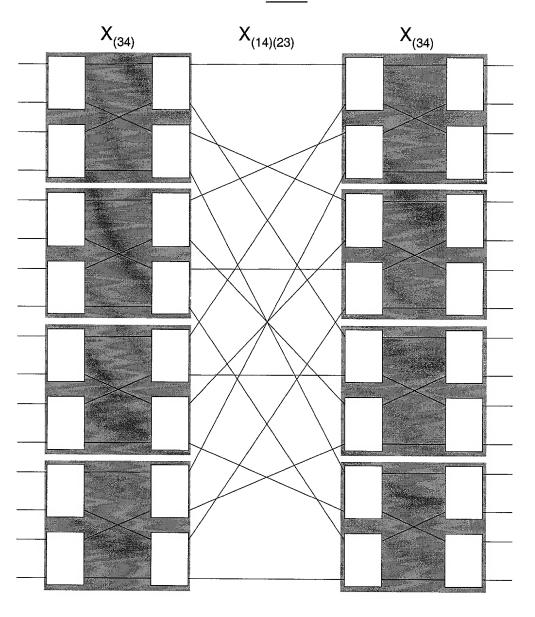
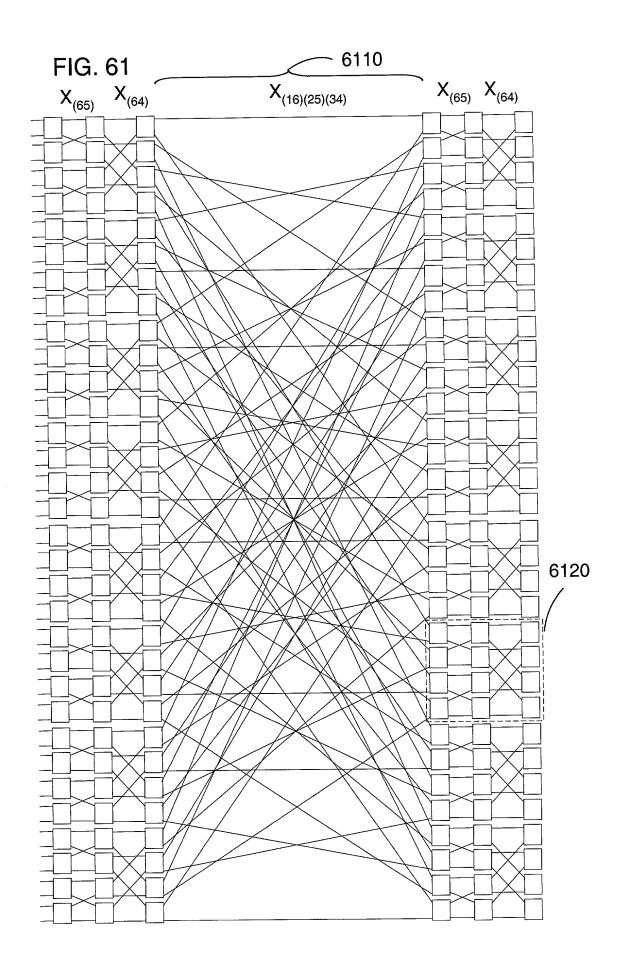


FIG. 60



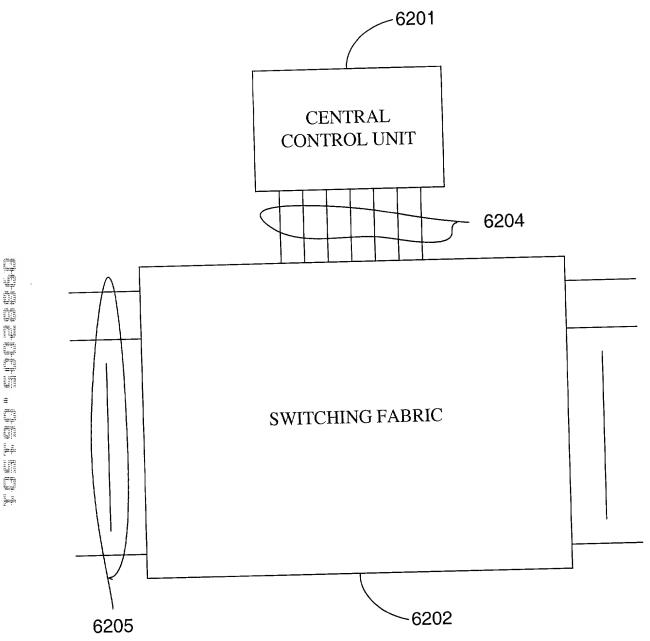


FIG. 62A

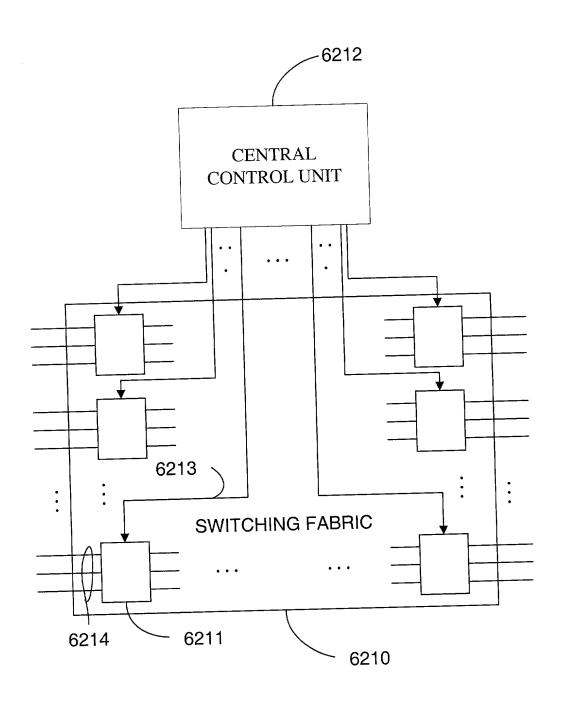
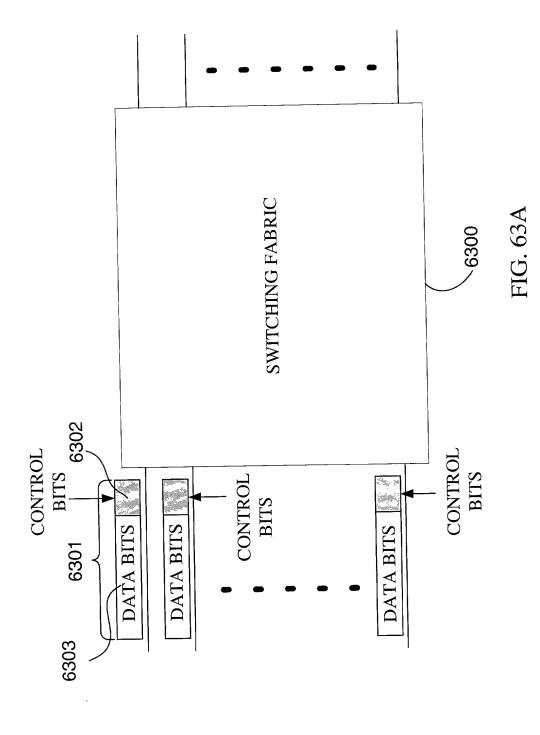


FIG. 62B



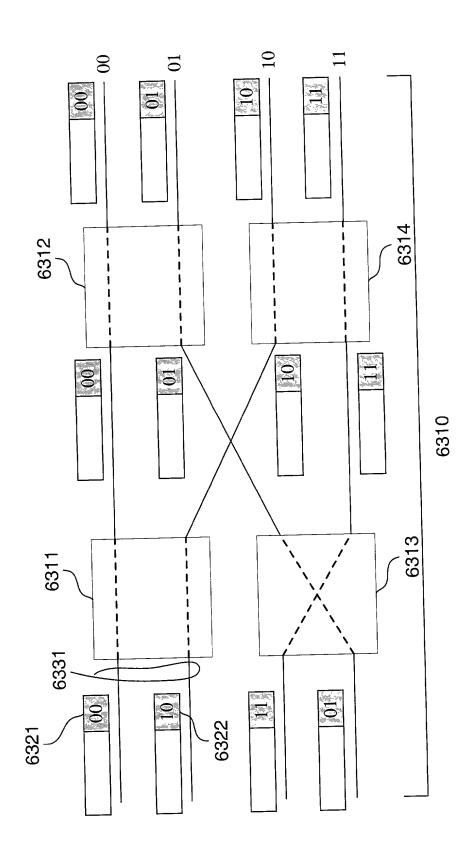


FIG. 63B

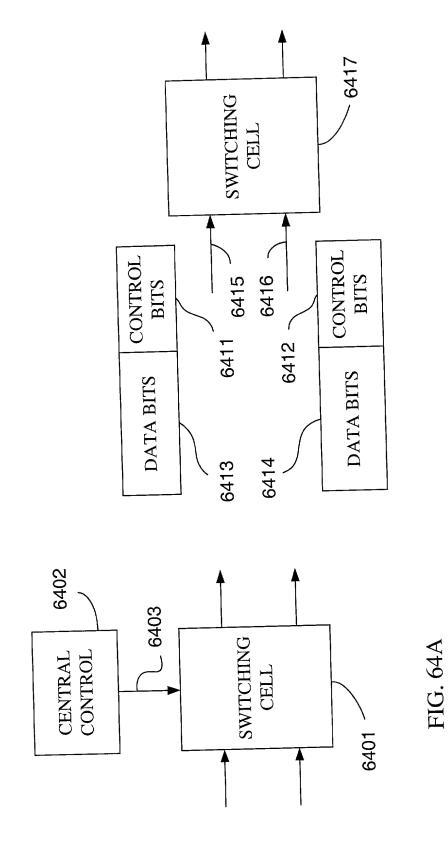
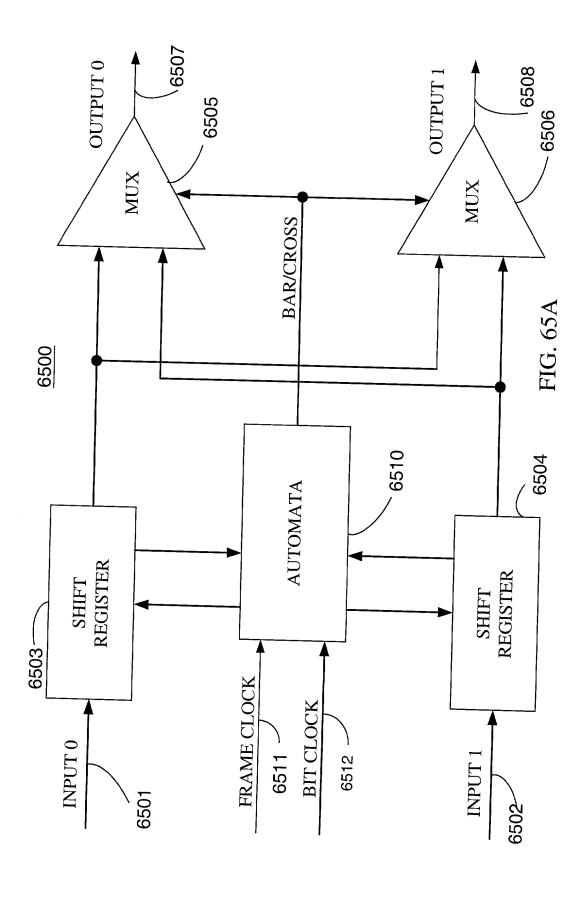


FIG. 64B



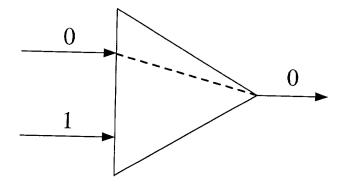


FIG. 65B

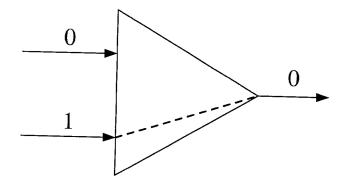


FIG. 65C

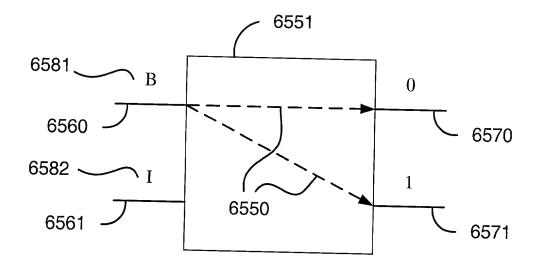


FIG. 65D

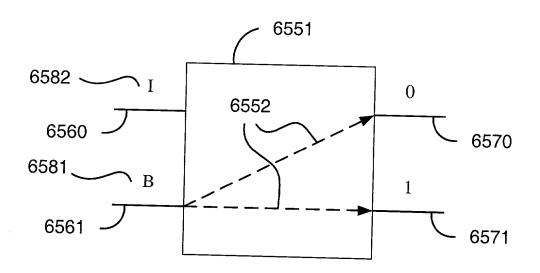


FIG. 65E

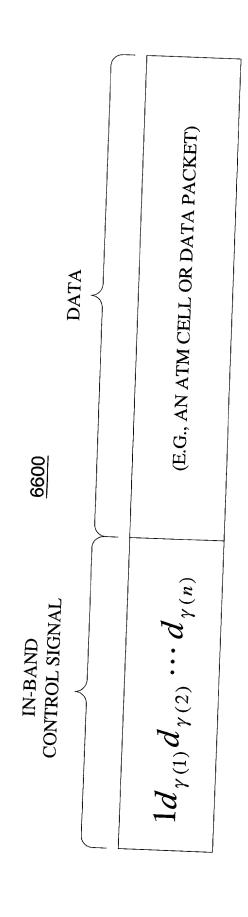


FIG. 66A

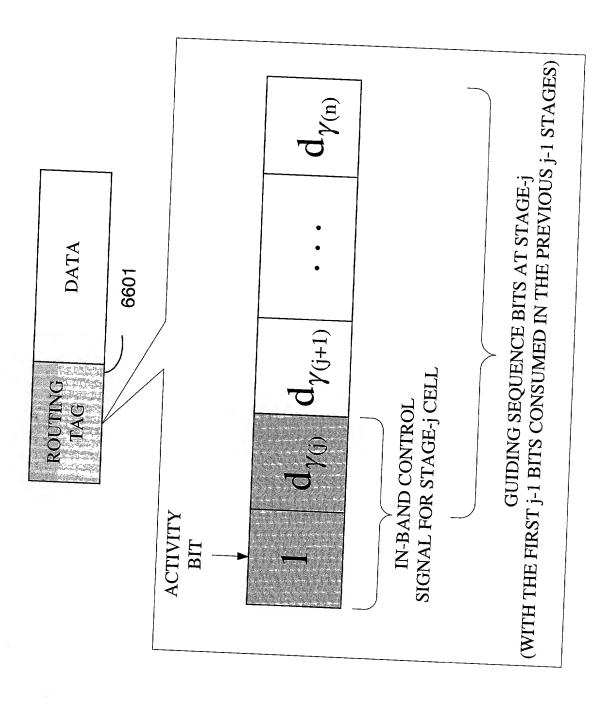


FIG. 66B

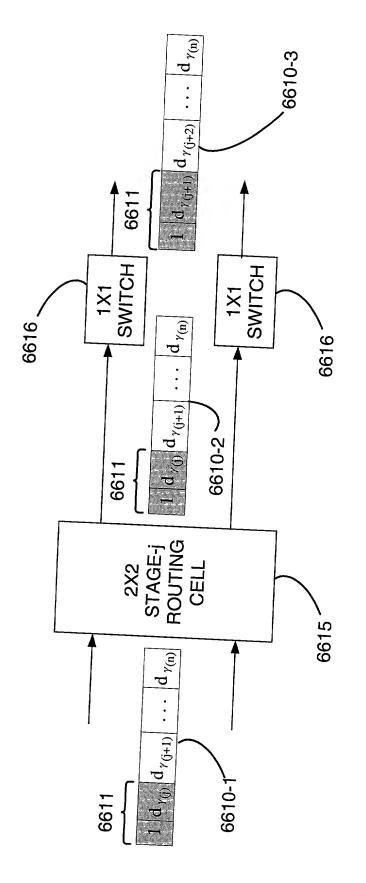
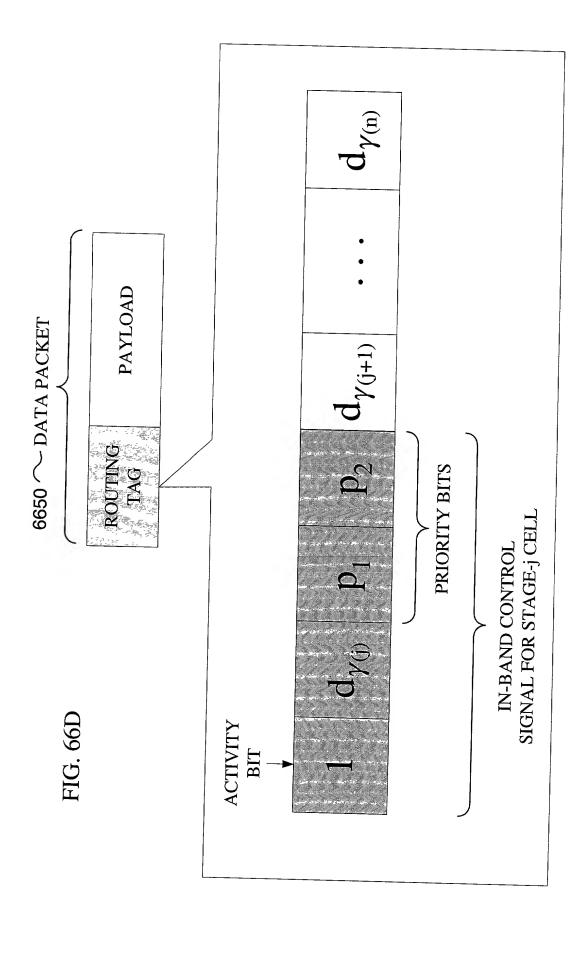
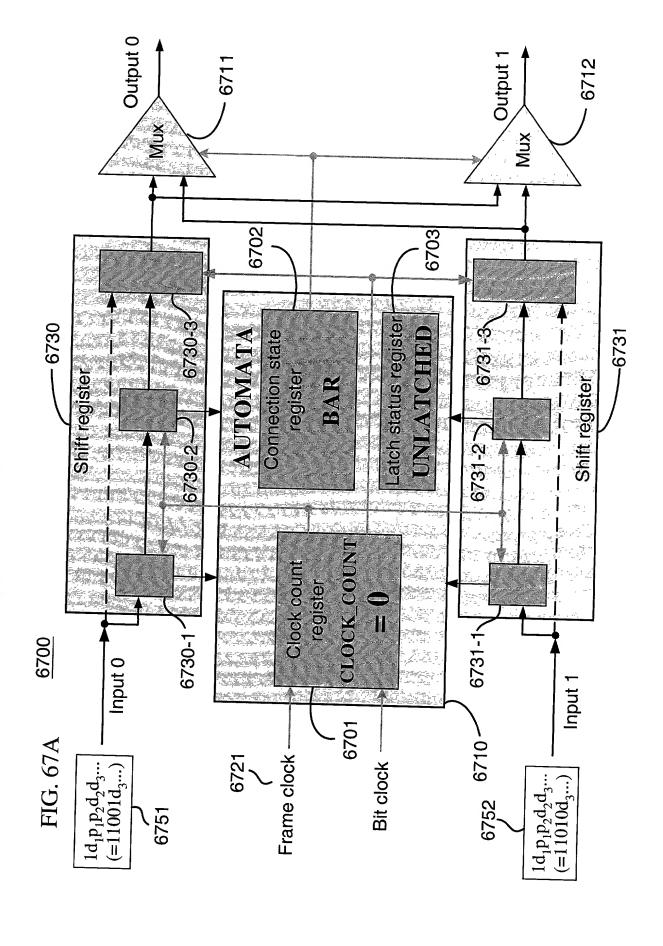
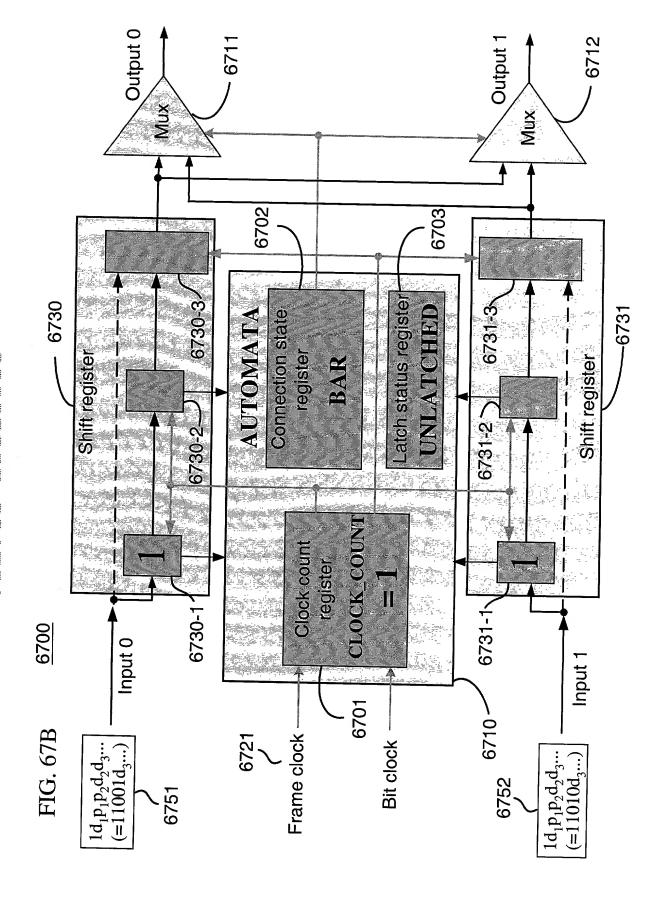
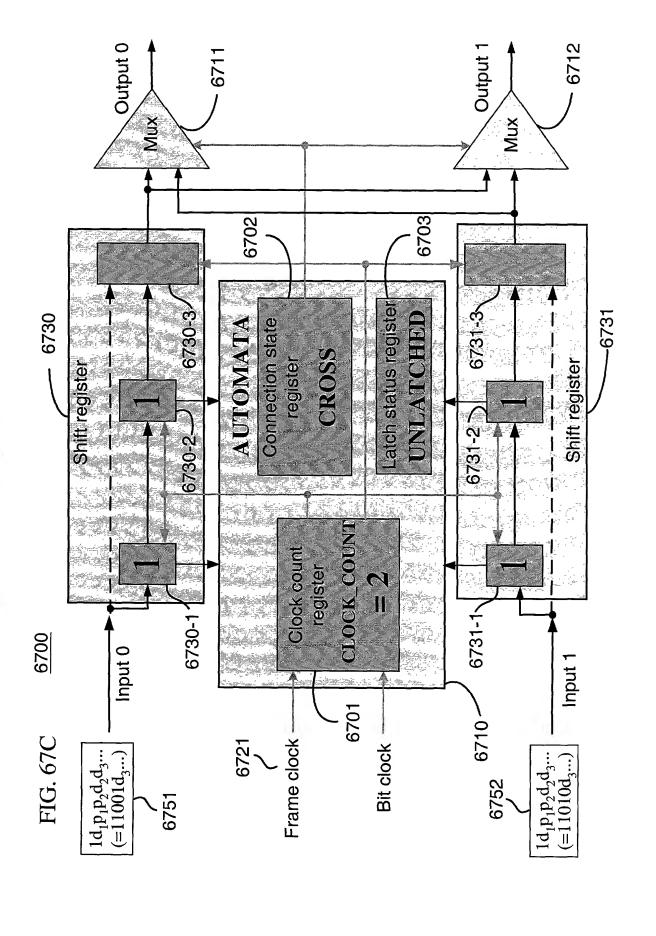


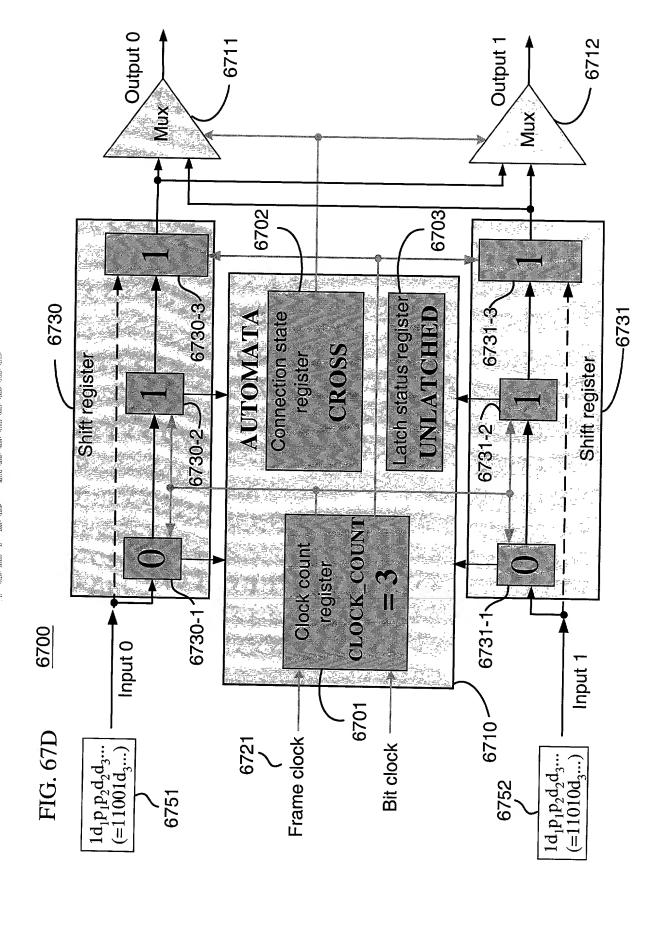
FIG. 66C

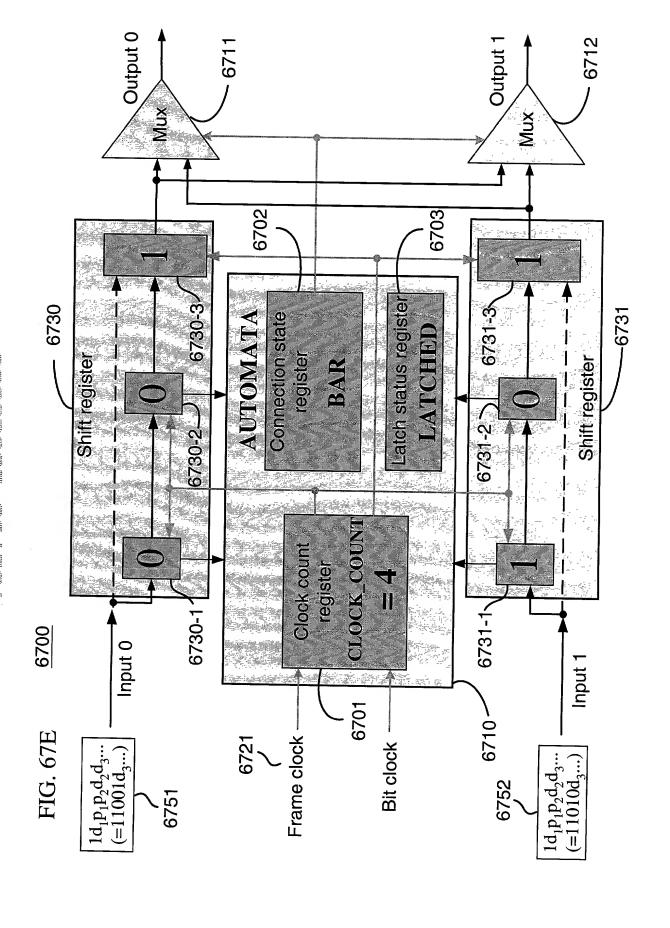


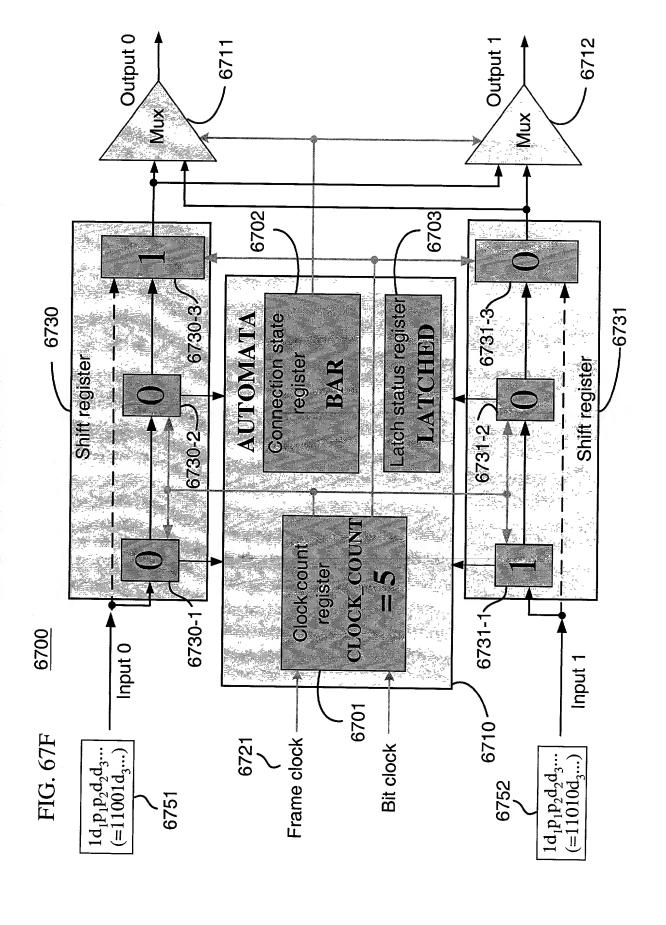












0089

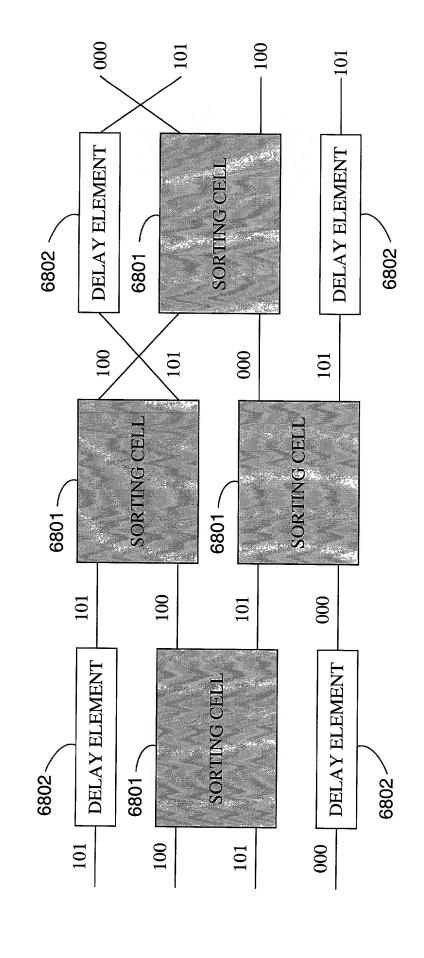
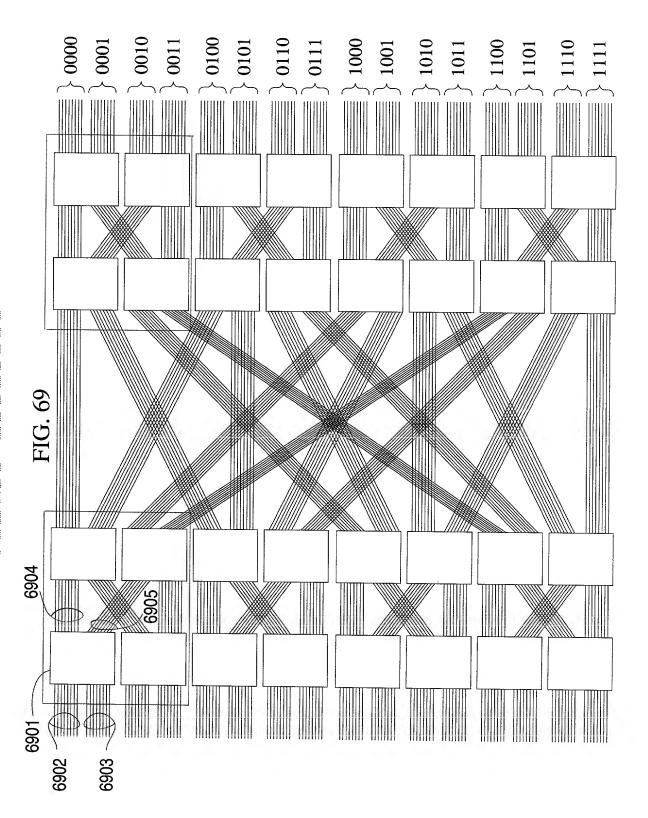
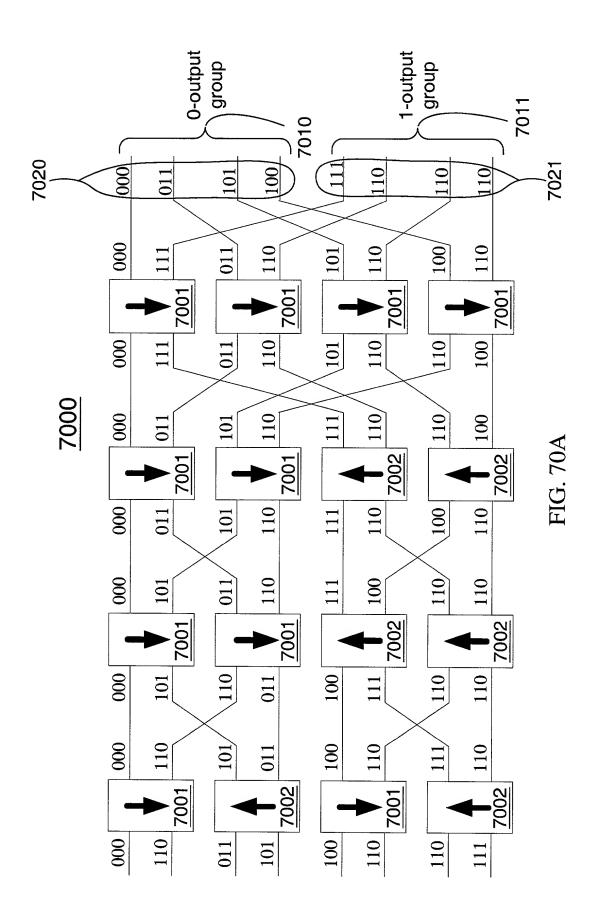
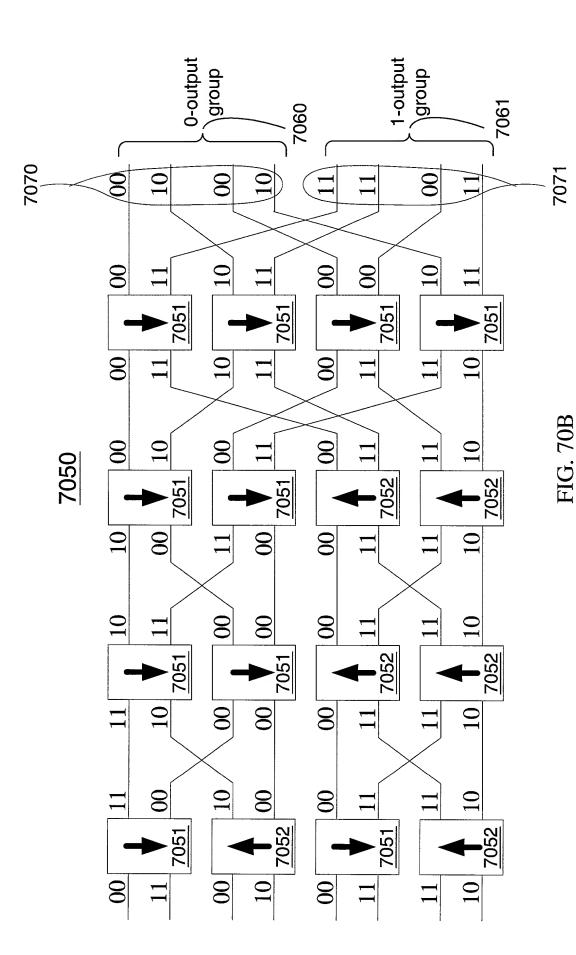


FIG. 68







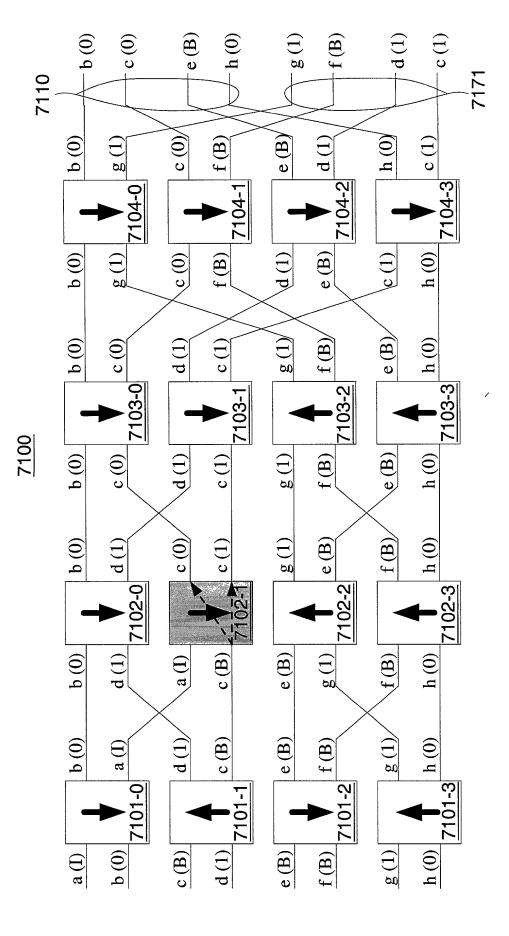


FIG. 71A

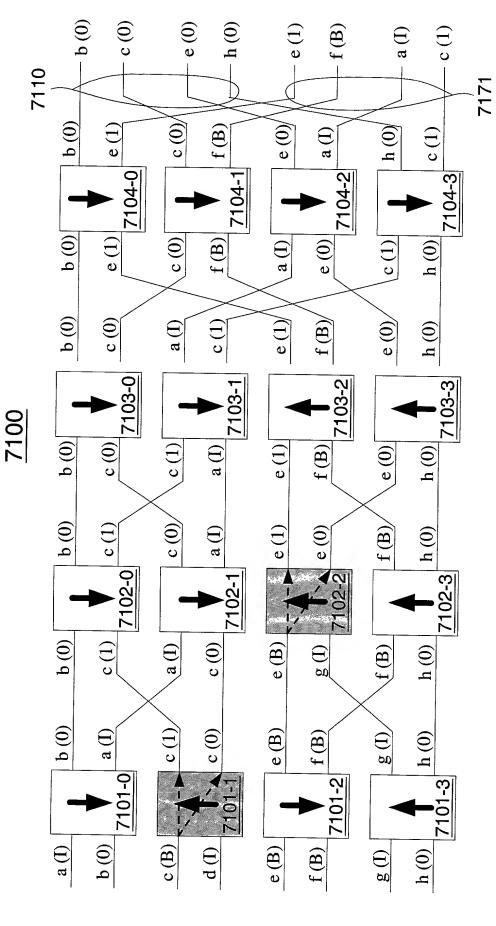


FIG. 71B

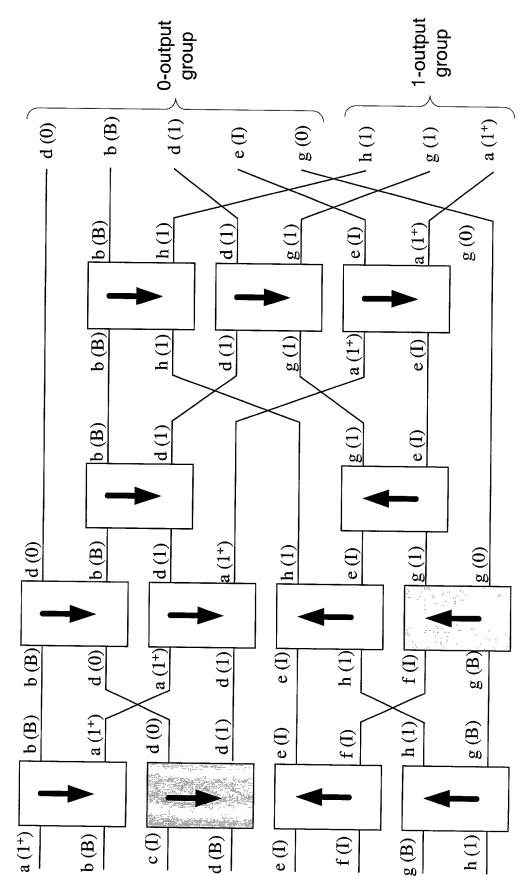


FIG. 72A

